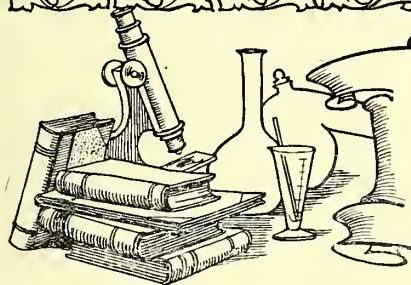


THE CHEMIST & DRUGGIST



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at Home and Abroad.

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Educational Matters

are dealt with comprehensively and concisely in the greater part of this number. The various sub-divisions treat of Pharmacy, including Preliminary, British and Irish pharmaceutical examinations, degrees in pharmacy, and teaching institutions (p. 56), medical, comprising preliminaries and particulars of the English, Scots, and Irish qualifications, and facilities for medical education (p. 61), dentistry (p. 66), veterinary surgery (p. 68), science (p. 68), and optics (p. 71). Further details of general Preliminary examinations are also given (p. 72), and particulars of scholarships and prizes (p. 73), appointments (p. 74), and books for the student (p. 75).

We also publish an interesting series of articles giving the opinions of the principal teachers of pharmacy in this country regarding the establishment of a curriculum for candidates for the Minor examination (p. 76). We summarise these on p. 52 and give suggestions for the consideration of the Council of the Pharmaceutical Society.

Mr. W. Maskew, Ph.C., gives an account of a recent visit to the Pharmaceutische Institut at Berne, embodying in his article particulars of the education which the Swiss pharmacist receives. A portrait of Professor Tschirch and views of the museum are given (p. 52).

Two accounts of experiences at the Minor examination in London are also given, these being always of interest to students (p. 81).

Summary.

The more notable items only are dealt with.

Articles and Communications.

Further opinions on chemists' combines are given by Mr. Cadge and Mr. Glass on p. 87.

Further particulars in regard to a new otto of rose adulterant are given in an article by Mr. E. J. Parry (p. 55).

The expression "bern in the purple" is the subject of a note by "Xrayser II." (p. 51) and a letter by Mr. E. J. Parry (p. 86).

Dr. W. Froembling (Cape Town) sends an interesting note regarding the buchu substitute which was referred to in the *C. & D.* in July (p. 87).

The Week's News.

The sale of poisons is the subject of an Ordinance in British East Africa (p. 75).

A portrait of the late Mr. Guttman and some notes regarding his accident are given on p. 48.

The French pharmacists' assistants' agitation for shorter hours has passed through a quiet phase during the week (p. 44).

It is proposed to hold a meeting of chemist-extractors on September 1 at the offices of THE CHEMIST AND DRUGGIST (p. 86).

The Council of the Pharmaceutical Society of Ireland was at the last meeting engaged chiefly with routine matters (p. 45).

The Incorporated Society of Pharmacy and Drug-store Proprietors of Great Britain has been registered as a company limited by guarantee (p. 49).

The annual meeting of the British Dental Association is referred to on p. 42. The retiring President mentioned that dental legislation is imminent.

The Hon. F. S. Grimwade is dead. He was the best-known man in the Australian drug-trade on account of his business abilities and services to the public. We give his portrait and biography on p. 47.

The Education Committee of the London County Council received on August 10 a deputation of opticians to protest against the references to sight-testers in the "Health Hints" which the Committee is issuing (p. 50).

Trade and Market Matters.

The Italian Government has again come to the rescue of the Camera Agrumaria, which controls the supply of citric materials in Sicily, and some important amendments in the original law are announced (p. 54).

The Board of Trade returns for July are eminently satisfactory, the feature being an increase of 2,588,762*l.* in the exports of manufactured goods. Chemicals and allied products substantially share in this increase (p. 53).

The market features include an active demand for cream of tartar and tartaric acid at dearer rates; other products which have more or less appreciated in value include copper sulphate, opium (in Smyrna), pepper, and hydrastis. New foreign henbane, guinea-grains, and Huil castor oil are cheaper. Business is dull (p. 82).

English and Welsh News.

When sending Newspapers containing Trade news to the Editor please mark the items.

Brevities.

The employés of Messrs. Ferris & Co., Bristol, held a show for sweet peas and carnations at the Union Street premises last week.

There is an epidemic of colds in Manchester. Eucalyptus oil is selling freely. Many cases of whooping-cough are calling for medical treatment in the district.

"The Times" states that postage stamps bearing a portrait of King George will be issued early next year. The new stamps will only be issued as the stocks of Edwardian stamps become exhausted.

The Australian Government have resolved to invite the British Association to meet in Australia in 1913 or 1914. The Commonwealth Parliament are being asked to vote 10,000*l.* towards the expenses.

The annual exhibition of the Royal Photographic Society of Great Britain will be open from August 20 to September 16 at the Gallery of the Royal Society of Painters in Water-colours, 5A Pall Mall East, London, S.W.

A fire occurred at the drug-mills and distillery of Messrs. Stafford Allen & Co., Ltd., Cowper Street, London, E.C., on August 4. The damage was fortunately confined to one corner of the premises, and has not caused any interruption to the business.

The prompt action of the Burnley Fire Brigade on August 4 at the premises of Messrs. R. Minton & Co., paint-dealers, St. James Street, where were stored nearly 200 gallons of turpentine and about 100 gallons of methylated spirits, saved the premises from destruction.

Dr. H. Lewis Jones, who was the delegate of the British Government at the International Congress of Physiotherapy held in Paris in the early part of the year, reports to the Privy Council that the Congress meets in 1912 in Berlin, and suggests that the meeting in 1914 or 1915 should be in London.

A correspondent recently asked "John Bull" as to when the Army compounders will be admitted to the Register of Chemists and Druggists in accordance with the Poisons and Pharmacy Act. The Secretary of the National Union of Assistant Pharmacists has replied in that journal that "one hundred years hence would be a reasonable time for the Pharmaceutical Society to do as he (the correspondent) suggests."

During the hearing of a case at Dover in which a labourer was charged with attempting to commit suicide, Mr. A. C. Kay, chemist and druggist, High Street, said the man came to his shop and asked for 6*d.* worth of salts of lemon. Owing to the quantity asked for witness had his suspicions aroused and supplied tartaric acid. The man was subsequently found groaning at his lodgings, and he said he had taken salts of lemon. A constable administered an emetic and the man was removed to the hospital.

Analysts' Reports.

The only drug sampled at Rochdale last quarter was liquorice-powder, which the public analyst states was genuine.

Samples of olive oil, ground ginger, and honey, taken at Lincoln last quarter, were certified to be free from adulteration and of good quality.

In the county of Southampton last quarter the following samples were analysed: Arrowroot, 2; vinegar, 2; cream of tartar, 1. All were genuine.

In Sheffield last quarter the following drug-samples were analysed: Compound liquorice powder, 7; sweet nitre, 3; camphorated oil, 11. All were genuine.

Contracts.

Rotherham Town Council.—Executors of H. Davy, for the half-yearly supply of drugs to the hospital.

Eastry (Kent) Board of Guardians.—Hooper & Co., Pall Mall East, London, W., for a water-bed, at 2*l.* 15*s.*

Blackburn Town Council.—Hardman & Holden, for sulphuric acid to the Gas Department during the year.

Northfleet Urban Council.—Mr. E. A. Rayner, Northfleet, for carbolated fibre-powder, at 5*l.* 14*s.* per ton; and iron sulphate, at 2*l.* 15*s.* 6*d.* per ton.

Salford Town Council.—Higginbotham & Sons, for 148 tons of copperas, at 13*s.* 6*d.* per ton, to be delivered at the sewage works before the end of August.

The North London Mystery.

In connection with the disappearance of Mrs. Crippen and the discovery of human remains buried in a house in North London, the husband has been arrested in Canada on a charge of murder. The "Daily Chronicle" states that the police have discovered that Dr. Crippen purchased five grains of hyoscine at Messrs. Lewis & Burrows', 108 New Oxford Street, London, W., on January 19. Mr. W. B. Trick, chemist and druggist, Chairman of the Board of Directors, was informed of the entry in the poison-book, and communicated with Professor Pepper, who is analysing the remains, and the police.

British Dental Association.

The annual meeting of the Association has been held in Liverpool, being opened at the Adelphi Hotel on August 4. The new President, Dr. W. H. Waite, was formally inducted after the retiring President, Mr. H. R. F. Brooks, had delivered an address. After referring to the election of a new House of Commons, Mr. Brooks said that proposals materially affecting the dental profession might shortly be submitted to Parliament. These proposals were probably the more imminent, and had been rendered the more necessary because of the recent judgment in the House of Lords, acting as the Supreme Court of Appeal, in the case of *Bellerby v. Heyworth & Bowen*. He was quite sure that any Bill amending or supplementing the Dentists Act of 1878 would receive in both Houses the careful consideration demanded by its important bearing upon the health of the nation. Opinion in Parliament, as well as outside, could not fail to be largely influenced by the views, which, when finally expressed, would assert those objects—definite and indissoluble—for which the Association was founded, and for which it existed—the common good of their own profession and of the public. Dr. Waite then delivered his presidential address, which dealt with the progress of dental science at Liverpool, and after he had finished he was presented with his portrait in oils on behalf of the members of the North Midland branch of the Association. The social functions of the first day included a reception by the Lord Mayor and a public dinner. On August 5 papers on dental subjects were read at the sittings of the Association, which were held at the Medical School. August 6 was devoted to dental demonstrations at the new Dental Hospital in Pembroke Place.

Carbolic-acid Absorption.

At the Lambeth Coroner's Court on August 8, Mr. Troutbeck held an inquest concerning the death of a child named Sutton, aged two years, who had been run over by a van the previous week and died in St. Thomas's Hospital. Dr. James Parkinson Lupton said that when first brought to the hospital the child had an injury to one of its legs. He prescribed a 1 in 20 carbolic-acid lotion to be used with an equal part of water; that was the hospital stock lotion. Subsequently the child was admitted suffering from carbolic-acid poisoning, which witness attributed to an idiosyncrasy on the part of the patient. Carbolic belongs to a series of drugs in relation to which idiosyncrasies occur. Dr. Kenneth Dalrymple Marriner, acting house surgeon, said that in his opinion the immediate cause of death was carbolic-acid poisoning due to an idiosyncrasy, and following absorption from the dressing. This condition was the result of the child's suffering from the *status lymphaticus*. Dr. Lionel E. Norbury, another medical witness, said he had known two other cases of small children who had had similar symptoms of carbolic-poisoning after being treated with carbolic dressing, but they fortunately recovered. A verdict of accidental death was returned.

Birmingham.

Dr. Coole Kneale has again been appointed to the lectureship of materia medica at the School of Medicine at the Birmingham University.

Messrs. Thornley & Co., Ltd., chemists and drysalterers, Snow Hill, whose chief director is Mr. Bloxidge, and who have several shops in the city, are making application for a poison-licence for each of their managers of the several branches.

Mr. Twiss, who has charge of the pharmacists' Wednesday afternoon classes at the Technical School, has just secured his D.Sc. at the Birmingham University. The Harborne Parish Magazine recounts this event in connection with an even more interesting one—viz., his marriage.

The death of Mr. Robert Skerrett, Trafalgar Road, Moseley, is announced at the age of seventy-three. Many years ago he was assistant to Mr. George Shaw, who was the first professor of chemistry of Queen's College and at the Midland Institute, Birmingham, where pharmacy students had perforce to go for their lectures on chemistry and allied subjects.

Sheffield Notes.

Mr. G. E. Scott Smith, the public analyst for Sheffield, was recently called upon in the course of a claim by a farmer for damages against a colliery company, to estimate the amount of smoke deposit on an area of pasture-land within a specified distance of the colliery chimney.

Considerable damage was done to fittings and stock by a fire which broke out on August 4 in the cellar under the shop of Mr. Charles W. Little, chemist and druggist, 197 Attercliffe Road, Sheffield. A lad had entered the cellar with a candle, and accidentally set fire to some woodwork near a large tank of paraffin. The fire brigade was soon on the spot and extinguished the fire with carbonic-acid gas before the tanks were affected.

In the Courts.

At Wolverhampton, on August 10, James Henry Hatfield, Denton, near Manchester, was charged before Mr. Stipendiary Neville with embezzling 4*l.* 10*s.*, the money of Martyn's Stores, Ltd., with whom he was an assistant at 2*l.* 5*s.* per week, rent and lighting free. Defendant was bound over for six months, ordered to refund the 4*l.* 10*s.*, and to pay the costs of the proceedings.

Judge Woodfall in the Westminster County Court on August 5 decided in the case of the Metropolitan Water Board *v.* Colley's Patents, Ltd., that the supply of water to the factory was for trade purposes. The defendants are therefore entitled to be supplied by meter and not at 5 per cent. on the rateable value, which they would have had to pay if the Water Board's contention was upheld—that this was a domestic supply because it was for the use of the factory hands.

At the Stannaries Court at Truro Judge Granger has been occupied for a week in hearing a case against the South Crofty Mine, Ltd., Carn Brea, in which the plaintiff, a farmer and carrier, sought to recover damages for loss or injury to live stock through the discharge of poisonous fumes from defendants' works at South Crofty. Defendants disputed that the fumes from their works had reached plaintiff's farm, which was more than 600 feet away. An expert witness, however, found arsenic on the surface of the herbage upon which the animals fed. The jury returned a verdict for plaintiff for £250. The judge said he did not entirely agree with the verdict.

Katherine Halstead, who was recently remanded at Windsor on a charge of obtaining perfumery, meat-lozenges, and other articles by false pretences from Messrs. Russell & Sons, chemists, Windsor, was again brought up on August 4. The Chief Constable stated that accused had been carrying on like practices for six or seven years, and while she had been under remand he had received over fifty letters with reference to similar charges, and involving goods to the value of over 200*l.* Under the certificate of the prison doctor she was left to be dealt with by a Justice under the Lunacy Act, and the Bench agreed to the withdrawal of the charge of fraud.

An Upminster Ramble.

The annual ramble of the West Ham Association of Pharmacists took place on August 4, when a party of members and friends proceeded by train to Upminster. The heavy rain which fell in London during the afternoon kept many would-be ramblers at home, but those who went were fortunate in having fine weather, as the rain-

storm did not reach Upminster. The ramble was conducted by the Vice-President, Mr. H. Soper, the route taken being through Upminster Common to Great Warley, where tea was served in the open air. A visit was paid to the picturesque Memorial Church near by. The journey home was made by a field path commanding a fine view of a charming bit of Essex scenery. Upminster was reached in time to catch the 8.30 train home. A photograph of the group was taken by Mr. E. Vaughan Rippon.

Cricket.

"Allenburys" C.C.—a team representing the Bethnal Green works and warehouse—defeated a team representative of the Ware factories at The Elms, Walthamstow, on August 6, by 69 runs, the scores being: Bethnal Green, 77; Ware, 8. For the victors Messrs. W. J. Stokes and C. Hyde bowled remarkably well, the former taking 4 wickets for 4 runs, the latter 6 wickets for 3 runs.

Chemist Golfers.

The severe drubbing which the Notts Chemist Golfers received at the hands of their Sheffield *confrères* on July 28 must surely have put them on their mettle. On August 4, in the Bulwell Forest monthly competition, the three lowest net scores handed in were: S. H. Slattin, 59; W. F. Wood, 65; and W. Meakin, 72. The score of 59 is remarkably low, and a local newspaper remarks: "There is something obviously wrong with the system of handicapping while such ridiculously low returns can be made."

Leicester Pharmacy Athletic Club.

On August 4 the Leicester Chemists played a return match with the Leicester Tramways C.C. on the home ground at Aylestone Park. A fine afternoon and good pitch seemed to warrant high scoring, but all through the match the bowling was deadly, making the batsmen fight for runs. The "Trams" batted first, and the innings totalled 70. The Chemists started none too well, two wickets being down for 18. The bowling was excellent and difficult to score from; nine wickets were lost for 62. Green hit well, and three threes placed the issue safe just in time. Three more were scored in singles, and then Green fell well caught, the Chemists thus winning a close and sporting game by 4 runs.

Irish News.

When sending Newspapers containing Trade news to the Editor please mark the items.

Brevities.

Dr. J. B. Blewitt, J.P., proprietor of the Medical Hall, 114 Newtownards Road, Belfast, has been appointed local examining surgeon to the Admiralty.

Mr. G. Hewson, dispenser at the Dorset Medical Hall, Dublin, had a narrow escape from drowning on August 6, while bathing at the Bull Wall, Fairview.

Mr. A. T. Bennett, Ph.C., John's Bridge, Kilkenny, has acquired the Medical Hall, Royal Oak Road, Bagnalstown, lately carried on by Dr. Charles Scott.

As an outcome of the recent prosecution of Messrs. C. R. Topping & Co., for having inedible lard in their possession, the Corporation of Belfast has sold the stuff, which was seized at the time, for 366*l.* 3*s.* 1*d.*

Messrs. McRoberts, druggists, have removed from 47 Ormeau Terrace, Ormeau Road, Belfast, to new premises at 71 Ormeau Road. No. 47 was for many years known as the Ormeau Medical Hall, and was formerly carried on by Dr. Bailie, the present Medical Superintendent of Health for Belfast.

Ballymena Board of Guardians on August 6 met to appoint an analyst for the Union in place of the late Mr. Robert Barklie. There were two applications, but neither mentioned a yearly salary, as asked in the advertisement. It was therefore decided to postpone the permanent appointment, and in the meantime to send samples alternately to the applicants.

A correspondent informs us that the club-room of the Irish Chemists' Assistants' Association, at 9 Harcourt Street, Dublin, is well patronised by the members. The programme for the winter session is being drawn up by

the Committee. One effect of the founding of the Association has been that many masters have already recognised the claims of their assistants, and have made concessions in regard to hours of business that are much appreciated.

Scots News.

When sending Newspapers containing Trade news to the Editor please mark the items.

Brevities.

Provost Perry, Lenzie, of Messrs. Perry, Hope & Co., Ltd., manufacturing chemists, Glasgow, is at present touring through Canada.

Photographic chemists have done brisk business in connection with the Lanark Aviation Meeting, the demand for photo requisites exceeding any met with for some considerable time.

Mr. George R. Thomson, son of Mr. R. Thomson, chemist, Elgin, has won the Scratch Cup of the Moray Golf Club at Lossiemouth for the fifth consecutive year, with scores of 78 and 76, giving a clear lead of 8 over the runner-up. Mr. Thomson, who is an assistant with his father and has not reached his majority, is considered one of the finest golfers in the north of Scotland.

Aberdeen.

The Aberdeen Parish Council considered on August 9 a recommendation from the Poorhouse Committee regarding the appointment of a dispenser, to attend daily, at a salary of 40*l.* per annum. Mr. Foote, in opposing the recommendation, said he was not to be driven to make appointments by the Local Government Board. Mr. C. W. Mitchell seconded the amendment, while Mr. Milne said he did not think they should appoint a dispenser who would only be at the poorhouse for a few hours each day and might not be available when he was urgently required. The report was adopted by thirteen votes to eleven.

Dundee.

It is reported that chemists' shops in Hilltown and Blackscroft districts are shortly changing hands.

The members of the Dundee Chemists' Assistants' Association on August 3 paid a visit to the Dundee Flour Mills and were shown the various processes to which wheat is subjected to make it into "best whites." The party was shown over the mills by Mr. W. G. Anderson, who had something to say about Sir Lauder Brunton's suggestion that the prevalence of appendicitis is due to the use of steel flour-grinding machinery. Mr. Anderson drew attention to a magnetic process for abstracting metallic particles from wheat.

Complaint has been made to the Sanitary Inspector of Forfarshire by Mrs. Martin, Newbigging, Tealing, that the water of an open ditch from which her farm stock obtain water is being polluted by a photographer emptying the washings of negatives therein. It is alleged that one animal had died as the result of drinking the water. The matter came before the Dundee District Committee of the County Council, when the Chairman (Mr. J. G. Soutar) stated that the photographer was a tenant of Mrs. Martin, and she had her own remedy. Mr. A. F. Durkie said it was a piece of nonsense, and that the ingredient of which complaint was made—hyposulphite of soda—was one of the best medicines the animals could get. A letter was read from Mr. Ferguson, veterinary surgeon, giving it as his opinion that the washings of the negatives could account for the animals' troubles, and that the practice should be at once stopped. The Committee took no action.

Bowling.

Two very interesting evening matches were played last week by a rink representing the Juniper Green Bowling Club and four members of the staff of T. & H. Smith, Ltd., Edinburgh. The first match, which was played in rather unsatisfactory weather conditions, resulted in a win for the home rink, but the visitors carried off the honours on the second occasion. Juniper Green was represented by Messrs. Logan, Wilkie, Clark, and Jardine (skip), and T. & H. S., Ltd., by Messrs. Anderson, Pringle, Paterson, and Marshall (skip).

French News.

(From the "C. & D." Correspondent.)

BRITISH CHAMBER OF COMMERCE.—At a board meeting of the British Chamber of Commerce, Paris, held on August 5, the Chairman (Mr. R. Walton) again drew attention to the prevalence of the fraudulent use of British marks on goods imported into and manufactured in France, and urged that active measures should be taken by British houses interested to repress this abuse. The Chamber has in many instances obtained from the offenders written promises to refrain from the use of these imitations of British marks, but action on the part of the British firms interested is also necessary if a stop is to be put to a practice so injurious to British trade.

SCHOOL HYGIENE.—The third International Congress of School Hygiene was held successfully in Paris last week, and the opening meeting was presided over by Professor Landouzy, the distinguished Dean of the Paris Faculty of Medicine. The British delegates included Sir Lauder Brunton. Physical culture, medical inspection, parasitic diseases, tests for hearing, and open-air schools were among the subjects discussed, and Dr. James Kerr (L.C.C.), Dr. Winson (Manchester), and Alderman Broadbent (Huddersfield) took an active part in reading reports. A large group of the Congressists visited the Pasteur Institute on August 5, and Dr. Roux, the Director, personally showed them over the laboratories and the crypt containing the tomb of the great savant.

ASSISTANTS' HOURS.—The Paris pharmacists' assistants have not been able to renew the violent manifestations against the pharmacies which remain open after 9 P.M. Since the outburst on the night of August 1 each of these pharmacies has been guarded by a force of police and any attempt at protesting has been vigorously checkmated. On the night following their great outbreak the assistants held a meeting at the Work Exchange and decided to continue their agitation. Various speakers denounced in a vehement manner the pharmacists who remained open after nine o'clock "on the pretence of pure philanthropy and with the sole object of maintaining a night service," as they said. The meeting passed a vote to the following effect:

Our sympathies are with those of our comrades who were victims of brutal treatment by the police, and we are prepared to stand by those who were arrested during the manifestations. A stigma is on these refractory pharmacists who have unworthily defied their 1,500 colleagues and the rest of the pharmaceutical body. We undertake to energetically maintain our rôle, and thank the Parisians for the sympathy they have shown for the just claims of assistant pharmacists.

The five agitators, MM. Dubiez, Roball, Cumidde, Nivet, and Théophile Jean, who were arrested last week have been released with a caution. The assistants have otherwise been active and have had posters stuck up over Paris, headed "Why two pharmacists will not close at nine o'clock," and stating that the employers are endeavouring to mislead the public. On August 8 about 250 pharmacists' assistants held a meeting at the Work Exchange, where they heard speeches by orators of the General Confederation of Work. On the other hand, the employers have not been idle. A delegation of the tradespeople of the Ninth Arrondissement of Paris, in which are two of the pharmacies whose owners remain open after nine, has approached the Prefect of Police with a view to securing aid against intimidation, and letters from the pharmacists who will remain open have appeared in the Press giving their view of the controversy. One or two other pharmacies have also already broken away from the nine-o'clock rule, a notable example being the large "cutting" pharmacy in the Rue du Havre, opposite the Gare St. Lazare.

CALIFORNIAN OLIVES.—The only parts of the United States where suitable climatic conditions can be found for the cultivation of the olive is in California and a limited portion of Arizona. Although olives have been grown in California since the days of the Mission *padres*, the public of the Eastern States (says the British Consul at San Francisco) does not seem fully aware of the fact that California is developing an olive industry which promises to rival the olive-groves of the Mediterranean.

Pharmaceutical Society of Ireland.

COUNCIL-MEETING.

THE monthly meeting of the Council took place at 67 Lower Mount Street, Dublin, on August 3. There were present Mr. John Smith (President), Dr. C. J. Blair Dunlop, Dr. J. A. Walsh, Mr. W. F. Wells, Mr. J. H. Bowden, Mr. James Michie, Mr. Thos. Batt, Mr. J. Burnett, Mr. Richard Blair, Mr. D. M. Watson, and Mr. G. D. Beggs, J.P.

THE BRITISH PHARMACEUTICAL CONFERENCE.

The PRESIDENT said that before proceeding with the business on the agenda he would like to refer to the British Pharmaceutical Conference, which had been held at Cambridge the previous week. Mr. Wells and himself of those who had been appointed delegates at the recent Council-meeting had attended. Mr. I. W. Nicholl, of Belfast, who had been a very regular attendant at these Conferences, was also present. The local Committee of Cambridge made ample arrangements for the entertainment of the visitors, and the time of the delegates had been not only pleasantly but very profitably spent. The papers were of a high order and of an interesting character. Certain subjects had been dealt with which, although they did not enter into the everyday work of the pharmacist, were at the same time of a most instructive nature. Among them he might mention the subject of standardisation of disinfectants. He was sure Mr. Wells would bear him out in saying that the discussion on that subject was one of the best they had listened to during a great many Conferences. There were also many matters of interest and of an educative nature to be seen in Cambridge. The equipment of the science schools was about the best in the world. The Conference were given a reception by the medical faculty of Cambridge, and instead of giving them an evening of music and so forth they were treated to a series of demonstrations in the lecture theatres. It is a pleasure to attend these Conferences, where one meets pharmacists from all parts of the world, and is able to exchange ideas. It was to him a matter for regret that there were not more members present from Ireland on this occasion. Their esteemed colleague, Mr. Wells, was elected to the Presidency. The Irish colleagues of Mr. Wells are even more competent to judge of his capabilities than the other members of the British Pharmaceutical Conference. Mr. Wells has been one of the foremost men in pharmacy in Ireland ever since the Society was formed, and he is looked upon as a leader in practical pharmacy in this country. He was aware that Mr. Wells follows in the footsteps of many eminent scientific men, but from the point of view of practical pharmacy he thought they would find it hard to surpass him.

Mr. WELLS said he would like to say that the Irish members of the Conference were, as usual, most warmly welcomed. They had a very pleasant time of it. Of course Cambridge is a place of special interest from the educational standpoint. St. John's College and King's College each gave them a reception and entertainment; and, as the President had said, the medical schools combined and gave a very hearty reception to the Conference visitors. The whole Conference was a great success; and the local people extended a very cordial welcome to them. He thanked the President for his very kind remarks with reference to his appointment as President of the Conference. He esteemed it a great honour to be elected to that position. It was not only a personal compliment but a great compliment to Ireland, because he knew that it was the wish of many members of the Conference for a long time past that they should have an Irishman as their President. (Applause.)

SERVICE ON JURIES.

Mr. FERRALL (Registrar) read the following letter from Mr. R. Winfrey, M.P., in reply to a communication suggesting the insertion in the Bill to amend the Juries Act, 1825, of a clause securing the exemption of chemists and druggists and registered druggists in Ireland from service on juries:

"House of Commons, July 9, 1910.
"DEAR SIR,—In reply to yours of the 7th inst., I am advised that it is not possible to include Ireland, as the County Juries Act, 1825, only applies to England and Wales, and that is the Act that is now being amended. — Yours faithfully,

"R. WINFREY."

The PRESIDENT said that not only had it not been found possible to extend the amendment to Ireland, but their brethren in Great Britain had also been excluded from the benefit.

Mr. WATSON said the Poisons and Pharmacy Bill, 1908, although a Bill to amend an English Act, was made to apply to Ireland. That was a good precedent.

NEWFOUNDLAND PHARMACEUTICAL SOCIETY.

Mr. FERRALL read the following:

"St. John's, N.F.

"SIR,—The Pharmacy Board has not yet been appointed by the Governor in Council. As Secretary and Treasurer, and also a nominee of the Society to the Board, your letter and copy of calendar has been placed in my hands pending the appointment of the Board. On behalf of the Society I would ask, if our Board accepts the licence issued by your Society, will your Society accept the licence issued by our Board in lieu of your examination?

"I am, yours truly,

"HUGH C. MILLER, M.P.S.,

The PRESIDENT: We can only write to say that we regret that we cannot reciprocate until we get a new Act of Parliament.

PRELIMINARY REGISTRATION.

Messrs. M. Munnely and A. Thornton, who have passed Intermediate Board examinations in all the subjects required, wrote desiring preliminary registration. Their application was granted.

CHANGES OF ADDRESS.

Communications were received from the following notifying changes in their addresses: Messrs. Alfred Adams, Ph.C., M.B., B.Ch., to Royal Infirmary, Liverpool; G. J. Farren, Ph.C., to Malin Road, Moville, co. Donegal; A. Harmel, Ph.C., to 112 Siemcourt Road, Johannesburg; Charles McCann, Ph.C., to Balinglass, co. Wicklow; Peter J. O'Toole, Ph.C., to Stephen Street, Sligo; Thomas G. Whitcroft, Ph.C., to Westport, co. Mayo; and Edward J. Hendley, R.D., to 25 Rosevale Street, Belfast.

A DONATION

was received from the Connecticut Academy of a copy of "The Amphipoda of Bermuda."

EXAMINERS' REPORTS.

Reports were received and adopted from the examiners regarding the Preliminary, Registered Druggist, Pharmaceutical Licence, and Pharmaceutical Assistant examinations; the Law Committee and the House Committee.

ELECTIONS OF MEMBERS.

The following were elected to membership: Mr. John Joseph Connolly, Ph.C., 21 Main Street, Youghal; Mr. Noble Graham, Ph.C., Drummack House, Lisnaskea; Mr. McLeahy, Ph.C., Medical Hall, Kilfinane; Dr. John Findlay Stevenson, Ph.C., The Hall, Ardrihaig, N.B.; and Mr. T. Dawson Tate, Ph.C., Castle Island.

Recent Wills.

LADY ROSCOE, Woodcote Lodge, West Horsley, Leatherhead, wife of the Right Hon. Sir Henry Enfield Roscoe, formerly of Owens College, Manchester, left estate valued at 100,452*l.* gross, with net personality 100,256*l.*

MR. WILLIAM JOHN MCNEIGHT, Eastwell, Palmerston Park, Dublin, chairman and managing director of Hugh Moore & Alexanders, Ltd., who died on June 6, aged seventy-six years, left personal estate in the United Kingdom valued at 21,354*l.* 3*s.* 10*d.*, of which 3,481*l.* 13*s.* 6*d.* is English estate.

MR. WILLIAM ADAMS, 274 Rotton Park Road, Birmingham, chemist and druggist, who died on April 25, left estate valued at 3,529*l.* 13*s.* 3*d.* gross, of which the net personality has been sworn at 1,322*l.* 9*s.* 8*d.* The surviving executor of his will is his son Mr. William Wright Adams, 36 Cape Hill, Smethwick, chemist

Business Changes.

Notes for this section must not be in the nature of advertisements, and they should be authenticated when sent to the Editor.

MR. W. FORD, chemist and druggist, 50 King Street, Maidstone, has opened dental chambers at 33 High Street, Tonbridge.

MR. JOHN DAVIES, chemist and druggist, High Street, Swansea, has disposed of the business he has conducted for forty-four years to Mr. Edward T. Riche, chemist and druggist, of Bridgend.

MR. S. COWAN SPROAT, chemist and druggist, has purchased the business of Mr. G. Fisher, chemist and druggist, 137 High Street, Wigton, Cumberland, and will carry it on under the style of Sproat & Co.

THE City of Bradford Co-operative Society, Ltd., who have just removed their drapery establishment from the large central stores in Sunbridge Road to Forster Square, are proposing to open the empty shop as a drug department.

In consequence of the expiration of the lease of the shop in Westgate, Bradford, which has for a long time been occupied by Messrs. Taylors' Drug Co., the company have closed that branch, and transferred the business to their head establishment in Upper Kirkgate.

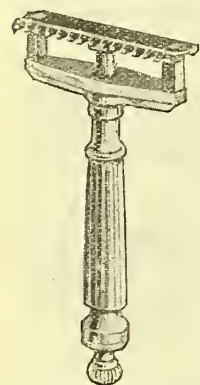
MESSRS. AYRTON, SAUNDERS & Co., LTD., 34 Hanover Street, Liverpool, have appointed Mr. James Haddock, pharmaceutical chemist, as general manager of the drug section of their business. Mr. Haddock, who has had control of the firm's manufacturing and analytical laboratories for the past few years, took over his new duties on August 1.

Trade Notes.

MESSRS. W. B. CARTWRIGHT, LTD., capsule and tablet makers, Burton Works, Dewsbury Road, Leeds, have registered "Tablets, Leeds," as their telegraphic address.

MR. THOMAS SWALES, druggists' sundriesman, Leeds, calls our attention to the fact that one of the entrances to his premises is 89 Albion Street and not 80, as stated in this column last week.

Y.S.C. RAZOR DE LUXE.—We have recently had an opportunity of using the new safety razor which is being introduced to the trade by the Yorkshire Steel Co., 30 Holborn, London, E.C. The result of our trial has demonstrated that this razor has points which give it distinct advantages over similar instruments. The Y.S.C. razor has double-edged blades $\frac{3}{8}$ inch wide, which are made rigid by being stretched tight, and it is fitted with means for adjusting the distance between the blade and guard so that for close shaving the space can be increased if required. An important point in the adjustment is that the guard and blade are always parallel no matter how far they are separated. The ordinary adjustment is such that daylight can just be seen between the blade and guard. When shaving, the razor handle is held at right angles



to the face, and when the operation is finished it is not necessary to take the instrument to pieces; all that is required is to draw back the guard and rinse the razor in hot water. The razor, of which there are two types, is sent out in neat leather cases with a packet of spare blades, and sell at 21s. and 31s. 6d., the wholesale price showing a good profit to the retailer. The extra blades are sent out in packets of 10, which retail at 2s. 6d. The Y.S.C. razor is a British invention, and is made in this country, with the exception that the blades are ground abroad.

PREPARED CHALK.—MESSRS. G. S. Mumford & Sons, Newcastle Granary and Mills, Farringdon Road, London, E.C., inform us that they are now packing prepared chalk so that each cone reaches its destination without being broken.

DENTAL EXHIBIT.—At the annual meeting of the British Dental Association at Liverpool Messrs. Burroughs Wellcome & Co., Snow Hill Buildings, London, E.C., had an exhibit of dental materia medica. These included solids especially intended for preparing mouth-washes and anæsthetic solutions, a special form of dental syringe, and the Opa liquid dentifrice.

BERKEFELD FILTERS.—The Berkefeld Filter Co., Ltd., 121 Oxford Street, London, W., have sent us a very interesting report which they have just received from Dr. Andrew Wilson, F.R.S.E. The report gives details of various experiments made with a view to showing how far the Berkefeld filters afford a supply of germ-free water; the research being carried out by a bacteriologist. The principle was to pass through the filters water contaminated with *Bacillus prodigiosus*, the filtrate being periodically tested for the presence of microbes. It was found that under all ordinary conditions the Berkefeld filters will yield a supply of germ-free water for at least fourteen days. These results are of great importance and will be appreciated by pharmacists, to whom the germ-excluding power of the filters will appeal.

Poisoning Cases.

THIRTEEN fatalities, including four misadventures, have been reported with poisons during the week.

Oxalic Acid.—At Aston, Maria Jaggers (52), widow, committed suicide with this poison.—At the inquest on the body of an unknown man who was found dead at Dysart Muir, near Lunan, the medical evidence disclosed that death was due to oxalic-acid poisoning. The remains had apparently lain on the moor for about a month.

Pussie Acid was the lethal agent used by William Daniel Morris (33), chemist and druggist, High Road, Willesden Green. The evidence at the inquest was to the effect that a girl named Daisy had formed an attachment for deceased, which had come to the knowledge of his wife.

Salt of Lemon was taken by Minnie H. Hartland (27), the wife of a Birmingham baker's canvasser, to end her life.—A Birmingham domestic servant named Julia Parton (21) also killed herself by taking the same poison.—At Accrington, Clement Lee (41) poisoned himself with salt of lemon. At the inquest, Mr. Stanley Snell, chemist, Burnley Road, Accrington, deposed that he supplied Lee with 2 oz. of salts of lemon to take stains out of some table-cloths. It was not a scheduled poison.

Spirit of Salt caused the accidental death of Alfred Murgidge (62), pensioner, Fratton, Portsmouth.—The death of Albert Whillock (15), at Birmingham, from spirit-of-salt poisoning, was also due to misadventure.—This poison was the agent used for self-destruction by Charles Rhodes (34), plasterer, Plaistow.—A Hoxton French polisher named Alfred Wilson took the same corrosive fluid with suicidal intent.—At Clapton, Amy Laura Villars (20), domestic servant, used the same poison for suicidal purposes. At the inquest the bottle (an ordinary 8-oz. medicine-bottle) was produced, and a juror said it was a very reprehensible practice to supply the poison in that manner. The Coroner: Recently there has been a law passed as to the sale of this poison, which says that the bottle must be labelled with the name of the seller and poison; but it seems to have been omitted in this case. Where was it obtained? Deceased's employer said it was obtained from Mr. Salmon, an oil and colour man, of London Road, Hackney Downs, and added that he had often had it from there. The Coroner: It was very unwise, whoever did it, and the man who sells it like this is liable to be prosecuted. A Juror: And he deserves to be; it has cost a life. The Coroner: My officer must go and warn this man as to how he sells this stuff. The jury returned a verdict of "Suicide during temporary insanity."

Veronal.—At the inquest held regarding the death of Franklin H. Pilleau (56), solicitor, West Hampstead, Dr. B. H. Spilsbury deposed that death was due to coma and heart-failure consequent upon injuries received from a fall, and probably accelerated by an overdose of a sleeping-draught. Dr. C. R. B. Eyre stated that sleeping-draughts of paraldehyde, bromide, and veronal had been prescribed for deceased, and that he found deceased in a state of coma, probably due to veronal. An open verdict was returned.

Kind not Stated.—At Halifax, Annie Suthers (36) intentionally killed herself by taking some corrosive poison.—At the inquiry into the death of Arthur Shockledge (31), labourer, who died in the Staffordshire General Infirmary, the jury found a verdict that death was caused by some irritant poison, but that the evidence did not disclose what it was or how it was administered.

Births.

COLE.—At Farnham Street, Cavan, on August 5, the wife of J. J. Cole, Ph.C., of a daughter.

KIRBY.—At Church Hill House, Orpington, on August 5, the wife of Cyril H. Kirby, of a daughter.

TRAVERS.—At West Bank, Avenue Road, Bangalore, India, on August 1, the wife of Morris W. Travers, D.Sc., F.R.S., of a daughter.

WILFORD.—At Nottingham, on August 7, the wife of John Henry Wilford, chemist and druggist, of a son.

Marriages.

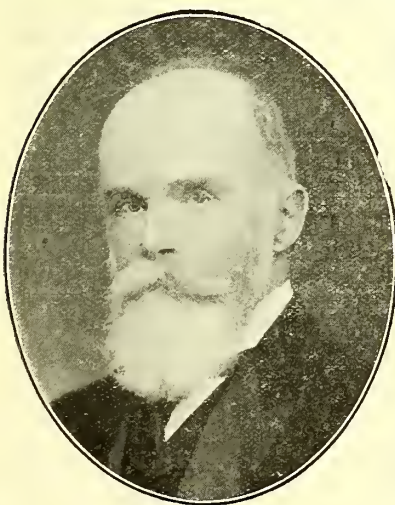
MATTHEWS—BELL.—At St. John's Church, Percy Main, on August 1, Hedley F. Matthews, son of the late Mr. Chas. Matthews, chemist and druggist, of Middlesbrough, to Mary Bell, youngest daughter of Mr. J. Bell, Brunton Street, Percy Main.

WILLIAMS — MOSS. — At Brookfield Congregational Church, Charlesworth, on August 3, Harold Williams, chemist and druggist, Walsall, to Miss Lizzie Moss, youngest daughter of Councillor Moss, Charlesworth.

Deaths.

AUSTIN.—At 198 Bermondsey Street, London, S.E., on August 6, Mr. Henry Felix Austin, pharmaceutical chemist, aged seventy-two. Mr. Austin was Chairman of Austin's, Ltd., manufacturing chemists, and was the son of Mr. Henry Austin, the founder of the business, who was also a pharmaceutical chemist. Mr. Henry Felix Austin passed the Major in December 1867. He died in the house in which he was born. The funeral took place on August 10 at Nunhead.

GRIMWADE. — At Harleston, Caulfield, Melbourne, Victoria, on August 4, the Hon. Frederick Sheppard Grimwade, of Messrs.



HON. F. S. GRIMWADE.

Felton, Grimwade & Co., wholesale druggists, Melbourne, aged sixty-nine. Mr. Grimwade, who was *doyen* of the Australasian wholesale drug-trade, was born at Harleston, Norfolk (Eng.), his parents removing soon after his birth to Ipswich, where he was educated at the Queen Elizabeth Grammar School. He served an apprenticeship with his father, who was a partner in the firm of Ridley & Grim-

wade (afterwards Grimwade, Ridley & Co.), which firm had carried on a wholesale druggists' business in Ipswich and London since 1843. One of the apprentices of the firm was Edward Youngman. With his brother Henry, Edward Youngman went to Australia about 1845 and began sending orders to his former employers. By 1852 a regular business had been established by the brothers as wholesale druggists, and naturally Grimwade, Ridley & Co., of London, were entrusted with their orders. Edward Youngman visited England in 1862, and young Grimwade, who was then about

twenty-one, accepted his invitation to go out to Victoria. The voyage was taken in the *Lincolnshire*, and lasted seventy-two days; letters to England then cost 10*d.* the half-ounce; cables were unknown, and orders to England took seven months for completion. Mr. Grimwade arrived at Port Phillip Bay in February 1863, and after four busy years events underwent a quick change by the death of Mr. Edward Youngman, who was drowned in the Bay of Biscay on the steamer *London* in January 1866, when 278 lives were lost. The news did not reach Victoria until March. Mr. Henry Youngman was heartbroken, and within a few months sold the business to his young manager and Mr. Alfred Felton, who had been in business about ten years as a wholesaler and general merchant. The two partners took over the business from July 1867, and for forty-three years it has been continued under the name of Felton, Grimwade & Co., the chief control during this period having been in the hands of the late Mr. Grimwade. Indeed, it may be said that Mr. Grimwade was the only man at that time in the wholesale drug-trade in Victoria who had been trained to it. Trading conditions were entirely different in those days; commercial travellers were unknown, and the only railway in existence ran to the Bendigo and Ballarat goldfields. The absence of the cablegram and swift steamers made opportunities for big profits, which will probably never recur. Quicksilver was more largely used in mining even than now, and in 1873 all the available stocks were bought up and the price raised to 5*s.* 6*d.* a lb., this meaning a profit of 2*s.* 6*d.* a lb. on each 75-lb. bottle. Podophyllum, then newly introduced, was selling at 4*l.* 4*s.* an ounce. Chloral hydrate ran scarce, and Grimwade's manufactured 16 oz., for which the Melbourne Hospital paid 3*l.* 4*s.* per oz. Sometimes Mr. Grimwade would take the road, when he was very successful in booking orders running up to 200*l.* per quarter. It seems curious to read that the firm "imported" the first drug-traveller, a Mr. Stephens who had been a traveller for Barron, Squires & Co. A large intercolonial trade was done during the first decade of the firm's career, which led to the establishment of important local drug-houses in which Felton, Grimwade & Co. became, and still are, largely interested, Mr. Grimwade being a director of Kempthorne, Prosser & Co.'s Drug Co. in the four centres of New Zealand, and of Felton, Grimwade & Bickford, Ltd. The firm also founded the Melbourne Glass-bottle Works, now the largest of its kind in Australia; they also took up the manufacture of mineral acids and compressed gases on a large scale. Mr. Grimwade, together with his late partner, Alfred Felton, may be said to have been the founders of the gigantic drug-business which now has ramifications all over the Commonwealth and the Dominion of New Zealand. His frequent visits to the Old Country (when we had the pleasure of several interesting talks with him) kept him *en rapport* with pharmacy on this side. He took a keen interest in the proprietary-medicine question, and the fact that he was a member of the Victorian Legislative Council for thirteen years, from 1891 to 1904, gave him opportunity of expressing matured opinion on the subject. He was President of the Melbourne Chamber of Commerce in 1883-4, a member of the Tariff Commission in 1882-4, and during the later years of his life was Chairman of the Royal Bank of Australia, Ltd., and a member of the Chapter of St. Paul's Cathedral. Since Mr. Felton's death the concern has been the sole property of Mr. Grimwade and his sons, Mr. E. Norton Grimwade, Mr. Harold Grimwade, and Mr. W. Russell Grimwade, B.Sc., F.C.S.

EDGSON.—At Ryde, Isle of Wight, on August 8, of acute pneumonia, Hannah Maud, the beloved wife of Hugh Edgson, junr., chemist and druggist, in her forty-fourth year.

FRACKELTON.—At Prospect Road, Bangor, co. Down, on August 9, Martha Frackelton, mother of Mr. John Frackelton, Belfast, aged eighty-seven.

MORRIS.—At High Road, Willesden Green, London, N.W., on August 6, Mr. William Daniel Morris, chemist and druggist, aged thirty-three.

SPENCER.—At Otley Road, Undercliffe, Bradford, on August 5, Mr. Thomas Spencer, aged fifty-one. He was the son of Mr. Joseph Spencer, whose business he succeeded

to when his father died. Mr. Thomas Spencer died suddenly in his shop after having returned from tea at his private residence close by. Mr. Spencer leaves a wife and three children.

THOMAS.—At St. Leonards-on-Sea, on August 5, George Danford Thomas, M.D., M.R.C.S., Senior Coroner for the Counties of London and Middlesex, aged sixty-three. Dr. Danford Thomas was educated at Bath and St. Mary's Hospital, and afterwards became a student at the Inner Temple. He took his degree in surgery in 1871, and five years later obtained the Brussels medical degree, with honours in medical jurisprudence. During the Franco-Prussian campaign he went out to the war with Sir John Furley and the British ambulance, and received the French Order of Merit for his services. On his return in 1871 he started practice as a medical man at Paddington Green, and four years later became the first medical officer of health for Willesden. Dr. Hardwicke, when Coroner for Central Middlesex, invited him to act as his deputy, and on Dr. Hardwicke's death, in 1881, Dr. Thomas won a contested election for the coronership, the appointment to which was at that time in the hands of the freeholders. The area in which he was called upon to serve is very extensive, comprising no fewer than fifteen Parliamentary divisions. During his tenure of the office Dr. Thomas has held some 40,000 inquiries, and during that time many chemists have been before him as witnesses. Dr. Thomas's long experience enabled him to appreciate the difficulties which a chemist has to contend with in the sale of poisons, and he was also well coached in the pharmacy laws of this country.

WHITEWRIGHT.—At Kirkcudbright, on August 5, Mr. Thomas Whitewright, chemist and druggist, aged eighty-seven. Mr. Whitewright, who was a native of Cross-michael parish, Castle-Douglas, went to Kirkcudbright as a lad of nineteen, and had a successful career, retiring many years ago. He was in business before the passing of the Pharmacy Act, 1868. He has been a generous helper of the deserving poor, paying rents and providing the necessaries of life. Some years ago he formed a rent trust, towards which he devoted a sum of 8,459/., the annual interest of which pays the rents of 70 deserving persons. Three years ago he formed a coal trust, towards which he devoted a sum of about 1,000/. The interest is expended in providing coal for deserving cases.

Personalities.

Notes for this section must not be in the nature of advertisements, and they should be authenticated when sent to the Editor.

MR. GEO. HEATON, chemist and druggist, has been elected to fill a casual vacancy on the Ripley Urban District Council.

THE name of Mr. John Henry Bell, chemist and druggist, Stapleford, has been added to the Commission of the Peace for Nottinghamshire by the Lord Chancellor.

DR. CHARLES FORSHAW, dentist, Bradford, has had the degree of "Doctor of Dental Surgery" conferred upon him by the National Medical University, Chicago.

MRS. GEORGE WOODHOUSE, wife of Mr. George Woodhouse, chemist and druggist, of 45 Bull Ring, Ludlow, has been appointed a governor of the Girls' High School.

MR. W. ARMSTRONG STOREY has been appointed Demonstrator of Pharmaceutics in the Pharmaceutical Society's School. The name was wrongly spelt in our last issue (p. 225).

MESSRS. HERVEY, PEEK & HERVEY, manufacturing chemists, Ordsall Lane, Salford, have presented a clock to Mr. Joseph Woodland, who has been with the firm for forty-eight years, and this week celebrated his golden wedding.

MR. E. T. WILLOWS, who made a successful airship voyage from Cardiff to London last week-end is a son of a Cardiff dentist (Mr. J. T. Willows). Mr. E. T. Willows is stated to have been destined for the calling of a chemist, but for the last five years he has studied aviation.

THE "Daily Telegraph" states that the chairman of the Sewage Farm Committee of St. Albans Town Council is the public analyst for the county of Herts (Mr. A. E. Ekins, Ph.C.), and that the advantage of a scientific man in such a position is reflected in the perfection which is shown in the sewage works.

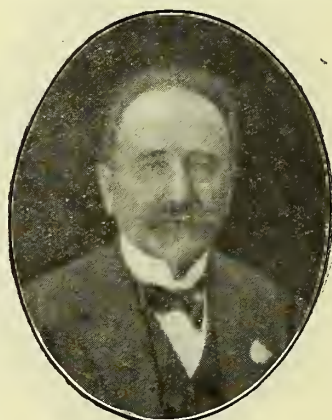
THIS is the portrait of Mr. Harry Brindle, Bolton, who has won the Fairchild Scholarship for this year (see *C. & D. Coloured Supplement*, August 6). Mr. Brindle has had experience at Blackpool and Bolton as an apprentice and dispenser, and is now at Manchester with Mr. Charles Turner. He won the scholarship with 414 marks out of a possible 500, which compares very favourably with the attainments of any previous scholar. Mr. O. F. Moss, Burslem, who won the England prize, was a pupil of Mr. E. Griffiths, pharmaceutical chemist, Kidsgrove, Staffs.



MR. HARRY BRINDLE.

MR. R. WALTER WARRICK, whose success at the examinations of the Institute of Chemistry was referred to in the *C. & D.* last week, is a nephew of Mr. F. W. Warrick, of Warrick Bros., 6 Nile Street, City Road, London, N. Mr. R. W. Warrick will shortly enter the family business, but before that will obtain experience at Grasse and in Germany.

THE accident to Mr. Oscar Guttman, whose death we announced in our last issue (p. 227), took place in the Avenue Louise, Brussels. With two other British jurors he had engaged a taxicab, and as there was not room inside for all three, Mr. Guttman took a seat beside the chauffeur. Another taxicab coming from the opposite direction struck the side of the vehicle in which Mr. Guttman was seated, and he was thrown a distance of 10 to 12 feet, alighting upon his head, which struck the kerb-stone. He was immediately taken to the Hôpital St. Jean and received every attention that medical skill could suggest. When the news reached the British Commissioner's office, Mr. W. Macnab, Dr. W. H. Perkin, and Mr. Walter F. Reid at once went to the hospital and did everything it was possible to do under the circumstances, communicating immediately with Mr. Guttman's relatives in London. It was soon obvious that the injury would prove fatal. Just before becoming insensible he said to Mr. Reid: "I am going home at 7 o'clock." These were his last words, for he died an hour later. He does not appear to have suffered any pain from the beginning. Mr. Guttman's numerous friends in Brussels vied with each other in rendering assistance in the many exigencies



MR. O. GUTTMAN.

occasioned by the sad occurrence; the Commissioner-General of the Board of Trade, Mr. Wintour, took all the official steps required for the removal of the body, and his department sent a beautiful wreath to accompany the body to England. Dr. L. F. Guttmann, deceased's son, who had been hastily summoned to Belgium, brought the body to England, and the funeral took place at Hampstead Cemetery on August 9. The portrait which we publish has a melancholy interest, as it was taken the day before Mr. Guttmann's accident, and is from a group portrait of the members of the jury group 21, Class 128, of which deceased was a member. A large number of Mr. Guttmann's friends in the field of engineering and professional chemistry were present at the funeral, the Society of Chemical Industry being represented by the President (Mr. Walter F. Reid), the Chairman of the London Section (Dr. J. Lewkowitsch), Mr. Thomas Tyrer, Mr. E. Grant Hooper, Mr. Gordon Salamon, Dr. E. Divers, and Mr. Julian L. Baker. Sir Edward Letchworth and Sir John Cockburn represented the Freemasons. Among the wreaths was one of copper beech leaves from "His friends and colleagues of the jury of the British Section of the Brussels Exhibition." The Institute of Chemistry and the Society of Public Analysts were also represented.

Mr. R. Dowty, fourth son of Mr. W. Dowty, pharmacist, Pershore, who is an assistant with Mr. C. A. Steward, Worcester, has been distinguishing himself as a cyclist. At Pershore flower show he won the half-mile and the mile cycle handicaps. A local account states that Mr. Dowty "is a clever rider, and as he is still quite young he ought to have a bright future on the racing track."

MR. CHARLES THOMAS WARD, chemist and dentist, Southwick, Sussex, was on July 27 presented with a handsome illuminated book by the rector and sidesmen of St. Michael and All Angels Church. The book contained the names of 300 subscribers, and was accompanied by a purse of 50/. The presentation was in recognition of Mr. Ward's services as people's churchwarden for twenty years, during which time he has not once missed a service.

New Companies Registered.

The letters P.C. mean Private Companies within the meaning of the Companies Act, 1907, and R.O., Registered Office.

LONDON AND SOUTH AMERICAN COMMERCIAL CO., LTD. (P.C.).—Capital 1,000/., in 990 preferred shares of 1/., each and 400 shares of 6d. each. Objects: To carry on the business of general merchants and manufacturers, importers and exporters of and dealers in, among other things, medicine, drugs, etc. R.O., 72 Bishopsgate Street Within, London, E.C.

SAMUEL WILLS & CO., LTD. (P.C.).—Capital 35,000/., in 101 shares (1,800 preference). Objects: To take over the business carried on by Samuel Wills & Co. at Castle Green and St. Philip's Marsh, Bristol, and at 6 Eldon Street, London, E.C., and to carry on the business of drysalts, oil-refiners, manufacturers of and dealers in colours, paint, varnish, white-lead, enamels, chemicals, drugs, etc. Registered by Waterlow Bros. & Layton, Birch Lane, London, E.C.

VALERIE JOY, LTD. (P.C.).—Capital 40,000/., in 11 shares. Objects: To carry on the business of manufacturers of and dealers in proprietary and patent goods, medical, pharmaceutical, and chemical articles manufacturers and vendors of all toilet and other preparations connected with the preparation known as "Joy," and to adopt an agreement with W. J. Gavin, Evelyn Margaret Gavin, and W. H. Dave. The subscribers are W. J. Gavin, 25 Park Mansions, S.W., gentleman, and F. A. Adeney, 34 South John Street, Bedford Row, W.C., solicitor. Registered by J. W. Dickson, 34 John Street, Bedford Row, London, W.C.

TURVEY TREATMENT ASSOCIATION, LTD.—Capital 10,000/., in 10s. shares. Objects: To carry on the business of specialists, experts in the treatment of alcoholism and drug-addictions, etc., to acquire the business carried on at 49 Maddox Street, London, W., as the Turvey Treatment Association, and to adopt an agreement with A. H. Johnston. The subscribers are A. Harrison, 76 Finsbury Pavement, E.C., secretary; B. Hanbury, 18 St. Swithin's Lane, E.C., merchant; M. Mosely, 50 Threadneedle Street, E.C., solicitor; P. Burley, 9 Townshend Road, Chislehurst, gentleman; W. A. Samuels, 14 Stirling Road, Tottenham, N., gentleman; W. G. Neal, 23 Ashchurch Grove, W., correspondent; R. J. Buttenshaw, 27 Gibson Square, N., accountant. R.O., 49 Maddox Street, London, W.

INCORPORATED SOCIETY OF PHARMACY AND DRUG-STORE PROPRIETORS OF GREAT BRITAIN, LTD.—This company was registered on August 2 as a company limited by guarantee, with an unlimited number of members, each liable for 1/., in the event of winding up, to provide a central organisation for, and promote and protect the interests of, pharmacy and drug-store proprietors, vendors of drugs, poisons, medicines, and chemicals and dispensers of medical prescriptions, to protect the public from the improper sale and use of poisons and drugs, etc. Prior to July 1, 1911, all persons who are pharmacy or drug-store proprietors or managers, or managers to registered chemists, and who have been in such businesses or managements for two years, shall be eligible for membership. On and after July 1, 1911, any person who has served a *bona fide* apprenticeship to a pharmacy and drug-store proprietor, or to a registered chemist and druggist or apothecary, or who has been a dispenser to a physician or surgeon or public institution, or to the Army or Navy, shall be eligible for membership, and on and after July 1, 1912, candidates for membership will be required to pass a theoretical and practical examination in addition to holding the above qualifications. The annual subscription is to be 10s. The management is vested in a Council, the first members of which are W. Huntrods, Holbeck Moor, Leeds; J. Bedford, 71 Brudenell Grove, Leeds; W. Atkinson, 321 Hunslet Road, Leeds; J. W. Shaw, 99 Hunslet Hall Road, Leeds; A. Farley, 19 Beeston Road, Leeds; A. Kirkman, 69 Armley Road, Leeds; G. Childe, 14 Woodhouse Hill Road, Leeds; I. Escriott, 94 Burley Road, Leeds; J. B. Clarkson, 113 Elland Road, Leeds; W. H. Hutton, 46 Dial Street, Leeds; L. P. Smith, Briggate, Garforth. These are described as pharmacy and drug-store proprietors. R.O., 14 Butts Court, Leeds.

Company News.

PRICE'S PATENT CANDLE CO., LTD.—The directors recommend a dividend of 15s. per share.

BLOOMER, FLETCHER & CO., LTD.—Mr. A. E. Percy, Dudley, ceased to act as receiver or manager on June 18.

CLARKE'S PYRAMID AND FAIRY LAMP CO., LTD.—Claims to be sent in to the liquidator, Mr. S. B. Clarke, Clarke's Pyramid and Fairy Light Works, Cricklewood, London, N.W., before September 20.

Mortgages and Charges.

Under the Companies (Consolidation) Act, 1908, Sec. 93, the mortgages or charges therein specified are (except in Scotland) void against the liquidator and any creditor of the company unless filed with the Registrar in accordance with the conditions laid down in the Act. The following have so been filed and, except where otherwise stated, are charged on the company's undertaking and property, present and future, including uncalled capital.

BURDIN & CO., LTD.—Particulars of 982l. 2s. 10d. debentures, created July 20, the whole amount being now issued.

LANCASHIRE TEETH CO., LTD.—Particulars of 5,000l. debentures, created June 16, the amount of the present issue being 100l.

LEWIS & COOPER, LTD.—Particulars of 500l. debentures, created June 16, the amount of the present issue being 150l.

PACKHAM & CO., LTD.—Particulars of 12,725l. debentures, created July 15, have been filed, the whole amount being now issued.

UNIGRIP ALUMINIUM STOPPER CO., LTD.—Charge on company's property dated July 22, to secure 1,800l. Holders: E. H. Hawkins, 4 Charterhouse Square, E.C., and W. Lawrence, 6 Rood Lane, E.C.

Gazette.

Partnership Dissolved.

JOSEPH, E. E. C., and HUNT, H. W., Southsea, Hants, artificial-teeth manufacturers, etc., under the style of Messrs. Joseph.

SCHOLEFIELD, R. E., and HAYLOCK, S. J., Blackheath, London, S.E., physicians, etc., under the style of Scholefield & Haylock.

WHITE, P. T., and WHITE, E., Goswell Road, London, E.C., and Yiewsley, Middlesex, manufacturing chemists, under the style of Alfred White & Sons.

WRIGHT, A., and KAY, S., Bradford, drysalts, under the style of Wright & Kay.

An Opticians' Protest.

WE referred last week (p. 231) to the steps that were being taken to protest against the issuing of a "Health Hints" leaflet by the London County Council in which parents were warned against obtaining spectacles "from an optician or 'eyesight specialist' unless they have been prescribed by a doctor." As a result a deputation waited on Mr. Cyril Jackson, Chairman of the Education Committee of the London County Council, on August 10, headed by the Master of the Spectacle Makers' Company, the Hon. Harry Lawson, M.P. The other members of the deputation were Mr. F. W. Bateman, Mr. G. C. Bateman, Mr. A. W. Boatman, Mr. H. Coleman, Mr. J. Harcombe Cuff, Mr. F. W. Dadd, Mr. G. E. Ellis, Mr. W. Heywood, Mr. A. Jameson, Mr. A. Jones, Mr. Overstall, Mr. Joseph H. Raphael, Mr. W. A. Steward, Mr. A. Upson, and Mr. S. W. Woolley. Colonel T. Davies Sewell was also present. Mr. Cyril Jackson received the deputation in the committee-room of the Education Offices on the Victoria Embankment, and was supported on his right by Dr. J. Kerr, the Medical Officer to the Department. Mr. Lawson, introducing the deputation, said the members represented the Spectacle Makers' Company, the Institute of Ophthalmic Opticians, the Society of Chemist-Opticians, the National Association of Goldsmiths, and the Scottish Optical Association, and he then detailed the steps that had been taken by these bodies in recent years to promote the education of opticians. He referred to the committee of experts which examined witnesses and advised the adoption of the sight-testing examination scheme by the S.M.C. The Company have taken care that their diploma-holders shall not undertake cases which require medical aid, each person before he receives a diploma being required to sign a restrictive agreement not to use drugs in the eye and to refer to medical practitioners any case exhibiting certain errors. Continuing, Mr. Lawson said that the proposition that all children's eyesight should be tested by ophthalmic surgeons is a counsel of perfection. The number of children attending the public elementary schools is too large, and the number of ophthalmic surgeons too small. By ophthalmic surgeons is meant those practitioners who have studied, *inter alia*, the practice of spectacle-fitting. To speak of medical men in general, as is done in the proposed leaflet, as if they are included in the same category is not a fair statement of the position. The time might come when all men qualified in medicine or surgery would be qualified also as opticians, but that is certainly not the case now. At the present day the average medical man has practically no knowledge of optics and no experience in fitting spectacles, so that it seems difficult to justify him being supported by the London County Council as a competitor of the sight-testing optician. In the County of London, as a rule, the prices charged for spectacles are inclusive of sight-testing, whenever necessary. Objection was taken to the eye-sight testing by hospital students and nurses on the ground that it must be very haphazard in character, while complaints of great pressure of work are received from those hospitals where the children's eyesight is tested by qualified surgeons. It was submitted that if the County Council must interfere to guide parents in the selection of prescribers of spectacles, that guidance should not go beyond a recommendation of those sight-testing opticians who, whether members of the Spectacle Makers' Company or not, undertake to conduct their business upon the lines laid down in the Company's regulations. The Master also referred to the warning which is printed on the optician cards circulated by the London County Council.

Then followed speeches from Mr. F. W. Bateman, Mr. G. E. Ellis, Mr. J. H. Cuff, Mr. A. W. Boatman, Mr. H. Coleman, Mr. J. H. Raphael, and Mr. A. Upson, each speaking from special points of view.

Mr. Jackson, in reply, promised to put the views of the deputation before the Committee, and, further, in reply to a question by Mr. Lawson, said the offending circular had been ordered to be issued, and it would be rather difficult to stop it going out.



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Telegraphic Address: "CHEMICUS LONDON."
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The object of this Department is to supply names and addresses of Manufacturers of, or Agents for, goods pertaining to the Chemical, Drug and Allied Trades. The "Buyers' Guide" in each issue of "The Chemist and Druggist" affords much information, but inquiries for anything not referred to therein may be addressed to this Department. Replies will be furnished immediately, or inserted in this section free of charge.

INFORMATION WANTED.

We would be obliged if any reader would inform us by post-card or telephone who are the makers or agents of the articles mentioned in the following inquiries received since our last issue:

- 253/5. "Dymoke," what is it?
- 253/45. "Cottage" feeders: makers.
- 259/19. "Sakir" or "Fakir" nail-stones.
- 256/44. Gluten suppositories for children.
- 252/66. "Touch me not," for insect-bites.
- 254/54. "Sylvia" nail-stones: actual makers.
- 255/70. "Vasotonin," a German asthma-cure.
- 252/66. "Bismarck Strasse" eau de Cologne.
- 249/46. Bailey's "Essence Pearl Tooth-wash."
- 259/60. "Yaritu" brand Castile soap: makers.
- 252/66. "Legnine" or "Lignine," absorbent substance for wounds
- 257/3. Aluminium combs, "Her Majesty" and "Atlas" brands: supply.
- 253/57. Oil for internal use (believed to be olive), labelled "Peccon et Maunier."
- 253/3. "Panama" syringe, price 7s. 6d. and 10s. 6d.: makers or suppliers.
- 259/33. Makers of a horse electuary (in 10s. tins); package illustrated with picture of horse being operated on for tracheotomy and wording, "No more roaring horses."

INFORMATION SUPPLIED.

During the past week we have answered inquiries regarding the following articles. The information will be repeated to any other inquirers who send to the Department a stamped and addressed envelope for the purpose.

- Acetic-acid makers (253/32).
- After-shaving crayons, makers (254/54).
- Antiformin, supply (254/13).
- Antiseptic shaving-blocks, makers (254/54).
- Antitussin, supply (252/74).
- "Astral" silver-plated goods, makers (Egyptian inquiry) (254/28).
- Automatic weighing and packing machines, makers (250/67).
- Baker's American Specific, proprietors (251/46).
- Bath-cabinets, makers (London) (251/52).
- "Blix" ointment, makers (255/24).
- Capsolin, makers (255/19).
- Casks, dry (for chemicals, etc.), makers (256/11 and 257/23).
- Dr. Cassell's tablets, makers (256/51).
- Davidson Rubber Co., address (253/2).
- Debt-collecting agency (Maltese inquiry) (255/8).
- Fordham's "Golden Balm," odd supply (253/62).
- Hæmatin albumen, Finsen, makers (254/17).
- Hollamby's balsam of aniseed, makers and agent (253/47).
- "Hytra" preparations, makers (252/66).
- Iodoglidine, makers (254/63).
- Little's Oriental Balm, maker and London supply (251/47).
- Little's sheep-dips, makers (225/38).
- Max Lehmann's shampoo-powders, makers (253/66).
- Metal boxes for tablets, makers (253/32).
- Ointment specialists (146/3).
- "Oxien" tablets, makers (256/59).
- Parker Pray's preparations, supply (225/39).
- "Pineoleum," makers and London supply (251/35).
- Prunoids, makers and agents (225/39).
- "Sanolene" disinfectant, supply (257/20).
- "Sectare," makers (252/66).
- Strontil bromid. exsicc., actual makers (255/1).
- "Sweepolene," suppliers (251/35).
- Talcum-powder tins, makers (254/64).
- "Thermophor," makers (252/44).
- Tobacco flavours and essences, makers (256/72).
- Towle's pills, makers (225/39).

Observations and Reflections.

By Xrayser II.

The Retrospect of Fifty Years Ago

which appeared in the *C. & D.* of last week is perhaps the most interesting of the series. "The salutary principle" there enunciated is undoubtedly the golden rule of journalism. To be always in touch with actual conditions, and yet a little in advance, in full sympathy with those for whom one writes, and yet sufficiently detached for a steady, complete, and impartial view of all that concerns them—that is what every writer for the Press must wish to be, and, if I may say so, it is what for the last fifty years the *C. & D.* has always been. I have known this Journal for much the greater part of that time, and I do not remember ever to have taken up a number in which there was not something of immediate interest, and something to stimulate and encourage. This does not mean that I have always shared the point of view, or agreed with the advice given, but I am constrained to add that in the great majority of cases time has proved the Editor right and myself wrong. Even if one could claim anything like an equality of ability, nothing but this could have been expected; for those who are engaged, "not without dust and heat," in the rough and tumble of the fight are not likely to gauge its fortunes or foresee its issues so clearly as one who stands a little aloof. We have known leaders, or would-be leaders, who were too aloof, just a little over our heads; whose ideals, like those of the Education Committee's recent report, were "unworkable." I am not one of those who think a programme necessarily unworkable because it is ideal, but there is a high-flying mode of advocacy which may make a perfectly feasible programme appear so. "Pitch thy behaviour low, thy projects high," says an old poet, and the *C. & D.* has always been of this temper—always progressive and independent, yet moderate, and in the best sense opportunist. It has always been on the side of the future while living in the present, and this is why it has grown to be what it is. My own connection with it as a regular contributor is so recent that I can say this with perfect freedom.

Ideal but Unworkable

is the verdict on the first attempt of the English Board of Examiners to get into grips with the curriculum idea. But let them not be discouraged; "try, try again," and by the time they have made themselves familiar with the subject they may evolve something workable, yet useful, even if some castles in Spain have to be sacrificed. There is no need to hurry. Mr. Allen is quite content to wait four years, so that when the great problem is settled it may be settled by proper agreement. What a splendid time pharmacy will have four years hence!—reciprocity with the colonies, a brand-new curriculum, and no end of other delightful things, for "until the curriculum is duly established, the position of pharmacy will never be what it ought to be in this country." So says Mr. Cross, and, like Brutus, he is an honourable man. Yet methinks I hear someone asking, Why this coyness? After twenty years of agitation for power to set up a curriculum we get all we ask for, but it seems we are not happy. If it be true that pharmacy has been lying under a ban all these years because of the absence of a curriculum—and every Government visitor, professor, president, and councillor has told us so with surprising unanimity—why must we wait six years, for two have gone already, before we are to get out of the slough of despond?

Disappointment

is hardly the word that expresses the feelings with which I read of the step taken by the Brisbane Pharmacy Board with reference to "reciprocity." It is difficult to imagine that "the Square" would be guilty of such ineptitude as the brief report indicates, and it is possible that after the General Purposes Committee have "sat" on the correspondence the result of their incubation may be a report that will place the blame elsewhere. But I confess that I am not sanguine, for my experience of official methods is not encouraging. I cannot see why immediate steps were not taken after the passing of the Act to settle this urgent and uncontroversial point. Surely no one anticipated a delay of eighteen months, much less four or five years, before an attempt was made to put the matter of reciprocity in certificates on a proper legal basis.

The Chaos in the Dental Profession

ought to be a warning to the Council of the Pharmaceutical Society. A writer in the "British Dental Journal" points out that the reason why there are 20,000 unregistered men mending and ending teeth is because the powers that be have not supplied the public with sufficient trained men who will serve the masses at prices the workers can afford. He says that for years he has "persistently attacked the unpractical and silly method of training dentists, and as long as we fail to provide curators of teeth the quack will flourish and the people be fleeced." The gravamen of this writer's charge is just the very thing our Councillors have been grasping after for years—namely, a highly educated pupil. The dentists have overdone it, and the result is a flood of unregistered men who have grown so numerous and so inconvenient that it is suggested that a special register be opened to accommodate them. This is just what the *C. & D.* has for years been pointing out as one of the fatal results of the Pharmaceutical Council's policy: an army of unqualified men carrying on a lower grade of business who will one day be so numerous that they, too, will knock at the door of the Houses of Parliament with an emphasis that will not be denied.

The Tyrian Purple,

which was derived principally from two species of Murex, or, as Pliny says, from *purpura* and *buccinum*, and is now said to consist of dibromindigo, was not exactly what we understand by purple, but was a rich crimson—"a colour between our murrey and scarlet," says Sir Philip Sidney in his famous romance, "The Countess of Pembroke's Arcadia." The Greek name for purple, like the Latin *purpureus*, was used to indicate various colours, and sometimes meant merely dark, as when Homer applies it to the sea, or bright, shining, without reference to colour; but as applied to dyes it seems usually, after Homer's time, to have signified a deep rosy red, or, as Sir James Murray says, crimson. It is by no means certain that the phrase "born in the purple" means, as is implied in your last week's article, born in that rank of society to which the use of purple stuffs was by law confined. Certainly no such law can have been known in the very earliest times in which purple stuffs were worn; and another origin for the phrase has been suggested which seems far more likely, though it has not perhaps been so generally accepted. The Greeks gave the name porphyry to the stone still so called, because of its "purple" colouring (the actual colour is, I believe, rather pink than purple); and it is to the fact that an apartment of the Byzantine Palace, which was lined with porphyry, was reserved for the use of the pregnant empresses that Gibbon attributes the appellation porphyrogenite, or born in the purple, given to the children born to them. This peculiar name, he says, was first applied to Constantine VII. This origin for the term is also accepted by Selden and by Scott, who in "Count Robert of Paris" speaks of Anna Comnena as "an imperial princess, porphyrogenita, or born in the sacred purple chamber." The restriction of purple clothing to the higher or official classes, though not to those of imperial rank, was, of course, much older than the porphyry chamber—it is referred to in 1 Esdras iii. 2; but it seems a less likely origin for the phrase, which, by the way, does not appear in English without reference to the Greek until Burke used it.

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Editorial Articles.

Pharmaceutical Curriculum.

WE publish to-day a series of interesting "opinions" from Principals of schools of pharmacy in England and Scotland regarding the curriculum of education and training which is under consideration by the Council of the Pharmaceutical Society of Great Britain. Before another Educational Number of the *C. & D.* is published details of the Council's scheme may be known; but we know at present what the proposals were five-and-twenty years ago, and that some councillors and examiners desire to enforce these now. These proposals are stated in the five numbered paragraphs, which introduce the Principals' "opinions" on p. 282, but as expressed by us they are probably milder and less onerous than the conditions which are now being formulated. It will be observed that the teachers are practically unanimous as to a curriculum being inevitable, not because it is essential for the business of chemists and druggists, but because the qualifying examination has been made so stringent that a period of collegiate training has been voluntarily established, and the regulation of this period—its nature, duration, and quality—will be of service rather than the contrary. There is also fair unanimity as to the nature of the curriculum. With one or two exceptions the Principals insist that the education in the science subjects of the qualifying examination should not be general, but special; that is to say, up to a point the chemistry taught to medical and science students may serve for students of pharmacy, but the Principals believe that in the case of pharmacy students the studies should be specially directed to elucidate pharmacopoeial, chemical, and pharmacy requirements. So with other science subjects. This insistence is most welcome; it recalls the practice of the early leaders of the Pharmaceutical Society, which has been to a large degree departed from in recent years by the introduction of professional examiners into the Boards, some of whom have little knowledge of retail pharmacy conditions. It may be said in passing that this change in the constitution of the Boards was made under an erroneous conception of the

teacher-examiner principle which prevails in Universities, where the teachers (*i.e.*, professors) of the candidates are their examiners, and external examiners are associated with them as assessor-examiners. This works admirably; the teachers, knowing the candidates, complete their education, so to speak, by drawing out what is in them, and the assessors ensure that candidates do not pass by favour. The system is so successful that the Pharmaceutical Council adopted it by appointing outside teachers to work in association with the pharmacists on the boards. It could not possibly bring the pharmaceutical examinations to the same status as the University examinations, because the conditions are fundamentally different; in fact, the pharmaceutical examinations cannot be brought into line with those of the Universities until the teachers of pharmacy, whose students are candidates, examine their own men in association with the Society's approved examiners. As it is now, the influence of external examiners in botany and chemistry has been to de-pharmaceuticalise in a large measure the knowledge of these subjects. It is an open secret that some pharmacist members of the Boards feel this, regret it, and there would have been an *exposé* of the situation long before now if these members had been backed up by the councillors. We mention it here because the Principals' "opinions" are so emphatic about the science subjects being made pharmaceutical, and we desire to impress most strongly this fact upon the Council and all others interested in pharmaceutical training. One principal (Mr. Muter) is rather in favour of a curriculum which will give the examinee professional status, but he is careful to qualify this by insisting that the status should first be ensured. This observation is important; it is along the line of thought which has steadily carried the Pharmaceutical Society away from the objects of the 1868 Act, and placed chemists and druggists in the false position of hope for better things in profit and status through higher qualification for their duties. Even the duties are to a large degree chimerical, and there is not the slightest hope that Parliament will assign new duties to chemists and druggists, such as the exclusive retail sale of pharmacopœial medicines and the compounding of physicians' prescriptions, which are the duties that the Minor examination is directed to. Protection in regard to these is what Mr. Muter refers to.

It is earnestly to be desired that those who are now engaged in drafting the curriculum will reconsider the whole position, first, as regards the service which the public actually require from chemists and druggists, and the duties which are entrusted to the latter by the 1868 Act; second, as regards those who enter the retail drug-trade, their educational equipment, and the shop experience or training which is available to them; and, third, to disabuse their minds of the notion that either the Society or those who pass its examination will get status or State protection by making the conditions of qualification more exacting or difficult. We know as a fact that forty-two years' effort on the part of the Society in the third direction has proved that neither the Government nor the public want 1868 Act chemists to be professional men, but shopkeepers of superior education and qualification to the ordinary run, who will not be above selling them what they want—the thousand and one articles other than poisons (the latter is their sole statutory duty). It is from businesses of this multifarious character that examination candidates are drawn, and to which they return after qualification. For pity's sake, we say to the Pharmaceutical Council, do not spoil these young men and women by a curriculum which may take them beyond the needs of their calling and sour their existence. We are as ambitious as any that the

standard of British pharmacy should be obtained, but we submit that the provisions for this are in the 1852 Act, and not in the 1868 one. The Pharmaceutical Society has made a tactical blunder in ignoring this fact, and trying to make the 1868 qualification what the 1852 one was intended to be. The results are, first, that there is a growing tendency in the retail drug-trade of Great Britain to carry on business without the 1868 qualification (this tendency will under a curriculum grow into an established custom, the path having been made easy by the Companies Act, 1907); second, the Major qualification is steadily moving towards extinction. The latter result may not be so disastrous as the first, but we do feel that it is most serious, and that the Council and Examining Boards should endeavour to realise where they are driving pharmacy to. The needs of the moment are druggists for the public, pharmacists for pharmacy, and we can only get the pharmacists we want through the Major examination. Reconsideration of the whole position is needed. We should like if the Council would shelve the Minor curriculum for a decade, and apply the proposals now under consideration solely to the Major (as to which they have wide powers), making the requirements (1) the Preliminary examination, (2) three years' apprenticeship with a registered man, (3) a curriculum of study in botany, chemistry, materia medica, and practical pharmacy, and (4) a written practical and oral examination in all the subjects; those who satisfy these requirements to be registered under the 1852 and 1868 Acts. Ten years of a *régime* of this nature would be of service to pharmacy, and would give the Pharmaceutical Council time to avert what seems inevitable if similar conditions are applied now to the Minor examination—a second grade of retailers, freshly created by an Act to be promoted by what are now "the great unqualified."

July Trade.

THE Board of Trade returns for July are eminently satisfactory. True, the imports are less by 932,000*l.*, or 1.8 per cent., but this is due mainly to food, drink, and tobacco, grain and flour alone being 2,029,000*l.* less as a result of lower prices. On the other hand, the exports show an improvement of 2,901,000*l.*, or 8.2 per cent., and this in spite of the fact that, owing to the incidence of Sundays, there was one working-day less last month. Following as it does upon the other large increases which have continued with regularity since the trade-boom set in, this shows how firmly established the improvement has now become. The total imports for the month were valued at 49,384,462*l.*, and the total exports (British) at 38,388,177*l.* For the first seven months of the year the imports reach the huge figure of 383,744,443*l.*, showing an increase of 31,834,457*l.* upon the first seven months of last year. Similarly the British exports for the same period show a great improvement, the total value, 242,973,900*l.*, being an increase of 30,552,310*l.* for the period referred to. The features of imports last month were, as already stated, the decline in food and drink by two millions sterling. Raw materials, however, increased by 1,687,000*l.*, and this notwithstanding a further small decline of 66,000*l.* in raw cotton imports. Another satisfactory feature was a reduction of rather over half a million in imports of foreign manufactured goods, the most noteworthy item in this section being a reduction of 555,000*l.* in "other metals and manufactures thereof." There was also a decline of 19,500*l.* in chemicals, drugs, dyes, and colours, which are returned at 912,015*l.* for the month, but on the seven months the increase is 150,429*l.* The decline last month applies to almost all the

articles enumerated, and the amounts are consequently trifling. Quinine imports show a startling drop to 189,249 oz., or 120,425 oz. less, but so far this year the increase is 508,700 oz. The rubber imports continue their upward course, the July figures being 67,400 cwt., valued at 2,027,000*l.*, or an increase of 14,800 cwt. and of 1,081,000*l.* in value. For the first seven months the imports have reached the large total of 570,000 cwt., valued at 18,308,000*l.*, which represents an increase of 161,000 cwt. and 11,080,000*l.* in value as against the corresponding period of 1909.

The increased business in exports in the main applied mostly to manufactured goods. Raw-material shipments, in fact, declined by 72,000*l.*, while the advance in food and similar products was but 348,000*l.* Out of eighteen scheduled groups of manufactured products, only one—electrical goods—has the distinction of a minus sign. In fact, the figures generally point to considerable activity in practically all our leading industries, but especially in yarns and textiles. Chemicals, drugs, dyes, and colours are 150,429*l.* up, with a total of 1,523,791*l.*, and, looking at the individual items, the record is one of improvement in the principal lines of heavy chemicals. Medicine exports advanced to 170,023*l.*, and for the seven months the figures reach 1,066,247*l.*, or 94,408*l.* more, which is very satisfactory.

In the miscellaneous section we note much larger imports of quicksilver by 159,251 lb., and for the seven completed months the excess is now 288,779 lb., this probably accounting for the recent disturbed condition of the metal; on the other hand, exports in July were 19,000 lb. better, while for the seven completed months the increase is 144,300 lb., but as compared with two years ago the exports have shrunk by 226,000 lb., which point to a certain displacement in favour of cyanides in gold-extraction. The receipts of shellac were 4,000 cwt. less last month, but so far this year the increase is 38,000 cwt., standing at 107,000 cwt.; the shipments during the seven months have declined to 37,027 cwt., or over 3,000 cwt. less. Imports of acacia gums at 50,870 cwt. are practically the same as for the seven months of 1909, but exports denote greater activity this year, rising from 8,953 cwt. in 1909 to 18,491 cwt. in 1910. We have imported 30,000 cwt. less of turpentine this year, the month of July alone showing receipts of 22,000 cwt. less. This points to the fact that consumers mostly buy from hand to mouth, but judging from information given in our Trade Report, possibilities appear to favour yet higher prices. The vegetable-butter or margarine industry has given a considerable impetus to coconut-oil imports, especially refined, while there was also increased activity in cottonseed, linseed, rape, olive, and palm oils. Soya-beans, which were not shown separately to 1910, have this year been imported to the extent of 362,541 cwt., China, Japan, and Russia being the sources.

Citrate of Lime.

In our issues of February 5 and 19 we reported that in consequence of complaints made against the Sicilian Camera Agrumaria which controls the supplies of citric acid materials, the Italian Government had ordered an inquiry and had appointed by decree a Royal Commissioner to administer the affairs of the Chamber. We also published a letter from the Commissioner in which he stated that the Government intended to give all the financial help required in order to regulate the prices of citric-acid materials. It would now appear, according to official information received from the Commissioner, that the Government has

considerably amended the Citrus by-products law of 1908 by another, which may be called the Camera Agrumaria Act (1910), the most important provisions of which are as follows:

(1) Taxes.

The taxes to be paid to the Camera Agrumaria, according to Article 11 of the Act of July 5, 1908, have been fixed as follows:

(a) For citrate of lime and concentrated lemon-juice, which are not deposited with the Camera Agrumaria, 1 lira for each percentage of citric acid in 100 kilos.

(b) For citrate of lime and concentrated lemon-juice sold through the Camera Agrumaria, 3 per cent. of the selling-price.

The Government has the power to change the above stated rates through a Royal decree.

It will be remembered the export tax on "outside" lime citrate was originally 0.60 lira, but was subsequently advanced to 1 lira per 100 kilos., at which it still stands.

(2) Citric-acid Factories.

The citric-acid manufacturers have to place their factories under the control of the Camera Agrumaria. If the manufacturers use citrate of lime or concentrated lemon-juice of their own production for the manufacture of citric acid, these raw materials are considered in the same way as if they were deposited with and then bought from the Camera Agrumaria. Should the manufacturers use citrate of lime or concentrated lemon-juice which they bought outside of the Camera Agrumaria they have to pay the tax (a)—viz., 1 lira for each percentage of citric acid in 100 kilos. The conditions of supervision, etc., will be fixed by a special ministerial decree.

This Article, it will be seen, places Italian citric-acid factories under the control of the Camera, therefore it is contended that these factories will be in the same position as English and Continental makers. This provision would appear to nullify any advantages which foreign factories hoped to obtain by erecting works in Sicily. The fact that they have to pay the 1 lira tax on "outside" citrate and be under Government supervision is likely to prove irritating.

(3) Price on which Advances are made to Depositors.

The working-year of the Camera Agrumaria begins on December 1, and terminates on November 30.

Not later than September 15 the minimum price for 1910-11 will be fixed by the Minister of Agriculture, Industry, and Commerce, according to the proposal of the Royal Commissioner, who must ask the advice of the Commission appointed by the Royal decree of January 20, 1910.

Such a price shall be fixed in a provisional way, and keeping due account of the conditions of the market and of production.

The difference between the minimum price and the actual sales price realised during the year 1910-11, after having made the deductions fixed by the law, will first be employed in paying out the minimum price on that part of the stock which may actually remain unsold. What remains after these payments have been made will be divided among all the depositors of the year.

The minimum selling-price is abolished by the above paragraph, and in its place is substituted a "provisional" price, on which an advance will be made to depositors. The difference between the latter price and the actual selling-price, which of course will be higher, will be employed in paying out the minimum price on that part of the stock which eventually may remain unsold. In this way any excess of production becomes annulled, as it were, so that it will not weigh on the financial position of the Camera.

(4) Advances to Depositors.

The advance of money to depositors, as per Article 7 of the Act of July 5, 1908, will be raised from two-thirds to three-quarters of the value of the minimum price of citrate of lime or concentrated lemon-juice.

(5) Advances to Small Producers.

The Camera Agrumaria is entitled to advance even the whole of the minimum price, but only to small producers or to the co-operative societies among citrus-fruits producers who manufacture citrate of lime or concentrated lemon-juice out of the fruits of their co-operative orchards.

The provisions of (4) and (5) are intended to restrict the difference between the price on which advances of money are made to depositors and the actual amount of the advance itself, so that the speculation hitherto prevailing on the above "differences" is suppressed.

(6) *Loans by the Treasury to the Camera.*

For the purpose mentioned in Paragraph 5, the Government will place at the disposal of the Camera Agrumaria 2,000,000 lire, in ten yearly instalments of 200,000 lire, beginning in the working-year 1913-14. The "Cassa di Depositi e Prestiti" is authorised to advance money within the limits of the two millions to the Camera Agrumaria at the usual terms.

This concerns the two million lire which the Italian Treasury is to place at the disposal of the Camera in order to strengthen the financial position.

(7) *Provisions in Favour of the Bank of Sicily.*

The Banco di Sicilia, besides the 15 per cent. according to Article 11 and the 7 per cent. as per Article 19 of the law for the Emmission Institute, approved by Royal decree of April 23, 1910, has also the authority to invest through the Ministero del Tesoro during the years 1910 to 1923 up to 10,000,000 lire of its gold reserves in foreign bonds, payable in gold or in silver at the full standard of the Latin Monetary Union, or in bills of exchange payable abroad, which have all the guarantees fixed by Royal decree of October 10, 1895. The interests of these investments shall be accumulated and re-invested in Government securities, in order to create a special reserve fund as a guarantee to the Banco di Sicilia for all the facilities granted by same and authorised by special laws in favour of the Sicilian sulphur and citrus-fruit industries. From January 1, 1924, the interest will be placed to the credit account, which has to be divided between the Government and the Banco di Sicilia.

By the provisions of this Article, a guarantee fund of about five million lire is created by the Government in

clause" is allowed. It need hardly be said that the latest move on the part of the Camera leaves the future outlook for citric acid more perplexing than ever, and the fact that the Camera is helping to maintain an artificial position in raw materials, aided by the Government, is one that does not commend itself to the makers of citric acid.

Otto of Rose.

By Ernest J. Parry, B.Sc., F.I.C.

IT is no secret that the importation of scientifically prepared adulterants for otto of rose into Bulgaria has now reached enormous proportions, so that, if the most trustworthy returns are consulted, it is found that year by year the ratio of exported product to that actually produced grows larger. A month ago, a correspondent, usually well informed, and in no way interested in the matter, wrote me from Bulgaria telling me that I might expect to find an entirely new adulterant being used in the present season's otto, and the fact was also mentioned in THE CHEMIST AND DRUGGIST (July 30, p. 149). Of the use of this adulterant I have already obtained abundant evidence, although it has not been possible to separate the adulterant on account of the comparative smallness of the samples examined. I hope, however, shortly to obtain a sample of the adulterant itself in order to examine it fully. All that can be said at the moment is that it is an oil with a very high levorotation. The pure otto of the present crop shows but little variation in general from the past year's distillate, except that it is of distinctly higher optical rotation. The following figures are representative of six samples of the finest new otto obtainable—of exquisite odour, and distilled by firms of the highest reputation:

	1	2	3	4	5	6
Specific gravity 30° 15°	0.8570	0.8565	0.8588	0.857	0.8582	0.8576
Optical rotation 100 mm.	-4°	-5°	-4° 50'	-4°	-4° 35'	-5°
Refractive index at 25°	1.4630	1.4630	1.4632	1.4641	1.4635	1.4640
" " (after washing with H_2O)	1.4642	0.4638	1.0642	1.4651	1.4642	1.4648
Melting-point	21°	20.5°	21°	21.5°	22°	21°
Total alcohols as geraniol	74%	74%	75%	74%	75.5%	73%
Ratio geraniol citronellol	—	—	—	2.5	2.0	1.9
Acid-value	0.12	0.17	0.00	0.18	0.14	0.16
Ester-value	0.85	0.90	0.98	0.60	1.01	0.92
Saponification value	0.97	1.07	0.98	0.98	1.15	1.08

favour of the Bank of Sicily, so that this bank may freely give its support to the Camera.

From the above it would appear that the Italian Govern-

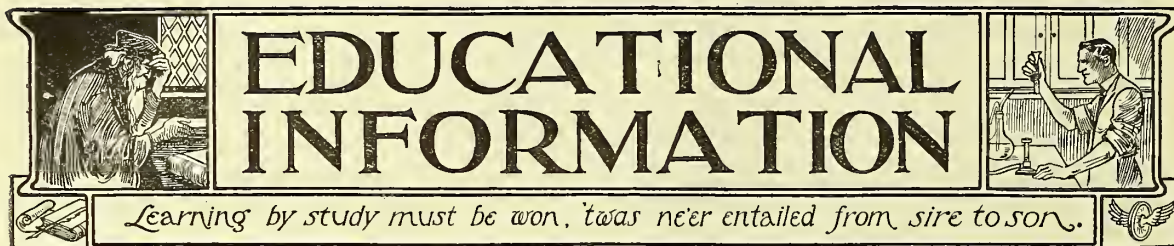
The following represent ten obviously adulterated samples, most of which show evidence of containing the new adulterant above referred to:

	1	2	3	4	5	6	7	8	9	10
Specific gravity 30° 15°	0.858	0.862	0.8595	0.861	0.853	0.868	0.872	0.851	0.858	0.858
Optical rotation 100 mm.	-6° 30'	-8°	-9°	-7° 50'	-4°	-3° 20'	-3° 40'	-4°	-9°	-7°
Refractive index at 25°	1.4600	1.4635	1.4670	1.4611	1.4592	1.4690	1.4689	1.4° 72	1.4640	1.4601
" " after washing	1.4654	1.4612	1.4671	1.4665	1.4665	1.4695	1.4695	1.4° 42	1.4685	1.4652
Melting-point	20°	21°	19°	19.5°	18°	17.5°	18°	15°	18°	19°
Total alcohols as geraniol	79%	78%	81%	79%	78.5%	80%	79%	79%	79%	78.5% !

ment has fulfilled its promises of six months ago in regard to financing the Camera. Thus it is anticipated by the Commissioner that there will now be no difficulty in carrying over the existing stock and preventing the accumulation of new stock. As regards quotations for citrate of lime, it is officially stated that there will be no reduction either in the old or new production during this or the next year, the price being 19/ 3s. per 305 kilos, on the basis of 64 per cent. citric acid at the Camera's warehouses at shipping ports, while as regards forward delivery, a "falling

I hope at an early date to be able to give fuller information in reference to this new adulterant.

CASCARA SAGRADA.—The British Consul at Portland, Oregon, in his annual report for 1909, writes as follows: "I mentioned in my report for 1908 that a combination had been organised for the control of stocks of cascara sagrada, of which this consular district is the principal source of supply. This arrangement fell through, and, as stocks were heavy, prices broke to 5c. (2½d.) per lb. Hamburg is the principal market for this product, which has hitherto been sent overland by rail and reshipped at Eastern ports, but is now sent by direct steamers from Puget Sound ports."



Pharmacy.

LITTLE change has taken place in professional curricula during the past year. The Pharmaceutical Society of Great Britain obtained power under the Poisons and Pharmacy Act of 1908 to make by-laws requiring persons desirous of presenting themselves for examination to produce evidence satisfactory to the Council of the Society that they have received a sufficient preliminary practical training in the subjects of the examination, and providing for periods of time and sources of study in connection with the qualifying examination, and dividing such examination into two parts. This is the subject of a special Series of Communications on p. 282.

The old conditions for becoming a chemist and druggist in Great Britain will hold good throughout the year to come. When the Pharmaceutical Council has completed the proposed regulations, they have to be embodied in by-laws, which the Council has to approve at three meetings, and thereafter they have to be submitted to a meeting of members of the Society, who will have the opportunity of passing or rejecting them. If passed, the by-laws are submitted to the Privy Council for approval, and some time must therefore elapse before the new conditions are enforced.

IN GREAT BRITAIN

the qualifying examination for registration under the Pharmacy Acts is conducted by the Pharmaceutical Society. The Registrar (Mr. Richard Bremridge), 16 Bloomsbury Square, London, W.C., is the person to whom to apply for printed particulars of the examination. The present regulations do not require that those desiring to become a chemist and druggist shall have been apprenticed to a chemist and druggist, but the equivalent of this is necessary, and each candidate for registration must produce a certificate of having passed a

Preliminary Examination

in English, Latin, a modern foreign language, and mathematics (including arithmetic, algebra, and geometry). This examination may be passed at any time prior to entering for the Minor or qualifying examination; but, as no one is accepted as a candidate for the Minor examination who has not previously been registered as an apprentice or student, it is obvious that the Preliminary examination must be passed some time before registration is effected.

The Society does not itself conduct a Preliminary examination, but accepts certificates of certain examining bodies, provided the whole of the subjects required have been passed at not more than two examinations of the same examining authority. The certificates which the Registrar is authorised to accept are as follows:

- University of Oxford.*—Junior or Senior Local examinations; Higher Local examinations; Responsions.
- University of Cambridge.*—Junior or Senior Local examinations; Higher Local examinations; previous examination.
- University of London.*—Matriculation examination; Higher School-leaving Certificate; Junior School examination; Matriculation School-leaving Certificate.
- University of Durham.*—Junior or Senior Local examinations; Certificate of Proficiency examination.
- University of Birmingham.*—Matriculation examination.
- Universities of Manchester, Leeds, Liverpool, and Sheffield.*—Joint Matriculation examination.
- University of Bristol.*—Matriculation examination.
- Universities of Edinburgh, Aberdeen, Glasgow, and*

St. Andrews.—Preliminary examination in arts, or medicine, or science; Junior and Senior Local examinations.

University of Dublin.—Public Entrance examinations (for "High Places").

Royal University of Ireland.—Matriculation examination.

University of Wales.—Matriculation examination.

Scotch Education Department.—The Intermediate Certificate or Passes in the Higher or Lower Grade of the Leaving Certificate examination.

Intermediate Education Board for Ireland.—Senior or Middle Grade Certificate examination.

Central Welsh Board.—Honours, Senior or Junior Certificate examination.

Oxford and Cambridge Schools' Examination Board.—Higher or Lower Certificate examination.

Educational Institute of Scotland.—Medical Preliminary examination.

College of Preceptors.—First or Second Class Certificate examination.

The regulation means, for example, that if a chemist's apprentice in Wales has, while at school, passed some of the subjects in the Junior Certificate examination of the Central Welsh Board, he may take the rest of the subjects at the same examination, but not at, say, the College of Preceptors; *the examination must be by the same examining authority.* There is no objection to a candidate taking, say, honours in one or more of the subjects and a Senior or Junior pass in the other subjects under the same examining body, but in no case is a lower standard than those specified in the above list accepted. Candidates may sit for the examinations as many times as they please, but *they must pass all the subjects in any two sittings.* For example, English, Latin, and a foreign language could be taken at one sitting and mathematics at another, but English and Latin taken at a first sitting, the foreign language at a second, and mathematics at a third would not be accepted for registration. Besides the above examination certificates, the Council is prepared to consider certificates of having passed in the specified subjects at an examination of any other legally constituted examining body, each individual case being considered on its merits. The Registrar is now empowered to receive certificates of the specified bodies and to register persons at any time on payment of the registration fee of 2*l.* 2*s.* For full particulars in regard to Preliminary examinations see "A Guide to Preliminary Examinations," by William Dodds, published by THE CHEMIST AND DRUGGIST at 2*s.* 6*d.*, or 2*s.* 9*d.* post-free.

Although the Pharmaceutical Society does not compel candidates to pass a Preliminary examination before apprenticeship, it is desirable that this should be done where possible. Unfortunately, in the elementary schools of this country, Latin is not now universally taught, so that a considerable number of the class from which chemists' apprentices are drawn have not, up to the time of leaving school, been taught Latin, with the result that it is impossible for them to register as apprentices or students before entering pharmacy. Nevertheless, they should endeavour, prior to apprenticeship, to pass a recognised examination in such of the subjects as they have been taught, and afterwards prepare themselves for Latin or such other subject as they have not passed in. The sooner this is done the better, because they will then be free to study those scientific and technical subjects embraced in the qualifying examination. Registration as an apprentice or student may be done at any time, provided it is prior to entering for

The Minor Examination.

The conditions for this examination are, broadly, that the candidate shall have been practically engaged in the translating and dispensing of prescriptions for three years prior to applying for admittance to the examination, that he is of the full age of twenty-one years, and is a registered apprentice or student. Printed forms for entry are supplied by the Registrar. The three years' practical engagement in the translation and dispensing of prescriptions may be with a pharmaceutical chemist, a chemist and druggist, or a private medical practitioner, or in a public institution, but it is necessary in each case that the declaration to this effect should be certified by a pharmaceutical chemist, a chemist and druggist, or a registered medical practitioner. The term of three years may be passed at one or more places, but all have to be specified in the declaration.

A COURSE OF READING.

Assuming that the candidate has been duly apprenticed to a pharmaceutical chemist or a chemist and druggist, the usual course to pursue, as soon as he has passed the necessary Preliminary examination, is to begin to acquaint himself by reading with the subjects of his daily work. The British Pharmacopœia, or a good commentary upon it, is essential for this, but instead of taking the subjects alphabetically, a good plan for the apprentice is to take the shop-rounds as the basis of his study. The periodical dusting of the bottles makes the apprentice familiar with the appearance of drugs and preparations, and it is a profitable thing to make a point of learning from the books something about a dozen or so of these every week. Squire's "Companion" is, on the whole, one of the best books for the purpose, but the student should not attempt to read everything that is given there. For example, in the case of Ipecacuanha, he should read the descriptive matter, then the Medicinal Properties and the Doses. Omit the Tests, then read what is said about Preparations, again omitting the Tests, as these come later on in the student's reading. A glance through the Non-official Preparations is of service. In many cases it may be possible for the student to prepare pharmacopœial or other galenic preparations, and this practice will stimulate further inquiry. For example, when the apprentice first makes pills or ointments, he cannot do wrong to spend half an hour or so in the evening reading up in a book such as "The Art of Dispensing," or Lucas's "Practical Pharmacy," about the various ointments and pills—how they are made, what they should be like, and so on.

The opportunities of learning outside the shop are chiefly afforded in local science classes, and the apprentice should, if possible, attend one or two of these throughout the evenings of the winter months. Chemistry classes are held in most science schools, and to this subject may be added physics, or any department of physics, such as sound, light, and heat. The "Corner for Students," conducted by Dr. Leonard Dobbin, gives the apprentice an opportunity of exercising his analytical skill, while the "Summer Studies" now running will aid him in his pharmacopœial chemistry. If there is a botany class, it should also be taken. The articles by Mr. J. C. Sheustone on the microscope (*C. & D.* 1909, II., p. 276) form a guide to microscopical work. In time the student will reach a point in his reading at which it would be well for him to follow the

MINOR EXAMINATION SYLLABUS,

a copy of which can be obtained on application, free of charge from the Registrar, 16 Bloomsbury Square, London, W.C. The Council of the Pharmaceutical Society recommends that all candidates, before presenting themselves for the examination, "should receive a systematic course of instruction occupying a period of not less than six months; and that such period of study should include at least 60 lectures in chemistry, 18 hours' work in each week in practical chemistry, 45 lectures and demonstrations in botany, and 25 lectures and demonstrations in materia medica." The course here outlined is generally followed in most schools of pharmacy and is taken by students immediately before entering for

the examination. The following is a summary of the subjects upon which candidates are examined:

Botany.—Classification, including sub-classes and natural orders, of Angiosperms and recognition of 45 specified medicinal plants. Morphology and anatomy of the plant, including recognition, by the microscope, of structures. Elementary facts about physiology and reproduction.

Chemistry and Physics.—Elementary knowledge of physical laws; chemical action; principles of chemistry; non-metals and their compounds (including impurities of British Pharmacopœia chemicals); metals, their oxides and salts, preparation, properties, and adulterations; carbon compounds, especially those used in medicine, and how to prepare and test them. Weight and volume under temperature and pressure conditions. The practical examination, determining specific gravities, recognition of chemicals by tests, qualitative analysis (two metals and two acid radicals), identification of alkaloids, etc., B.P. volumetric analysis, assaying galenic preparations (alkaloidal), and a preparation of B.P. inorganic and organic compounds.

Materia Medica.—Recognition of B.P. and other specified drugs, their varieties, sources, natural orders, commerce, morphology, and active constituents.

Pharmacy.—Operations involved in preparing drugs for administration, as in the making of extracts, infusions, ointments, pills, tinctures, and other galenic preparations, with a general knowledge of the processes, with strengths. Knowledge of Poisons Schedule. In the practical portion the candidate is required to make certain B.P. preparations, and to do everything required in compounding and dispensing physicians' prescriptions.

Prescriptions.—Reading and translating English and Latin prescriptions, and a general knowledge of posology.

Fuller particulars are given in the official syllabus. Accounts of the examination by candidates who have recently passed in London are given on p. 287.

Examinations are held four times a year—in January, April, July, and October—by the Board of Examiners for England and Wales, at the Pharmaceutical Society's house, Galen Place, London, W.C., and by the Board of Examiners for Scotland, at 36 York Place, Edinburgh. Candidates, no matter where they reside, may enter for the examination by either Board. The examinations are as nearly identical as they can be made. The fee for the examination is 10*l.* 10*s.*, which has to be paid to the Registrar, 17 Bloomsbury Square, London, W.C., before the 15th day of March, June, September, or December, and along with the fee a certificate of birth, a declaration as to three years' dispensing practice, and the proper entry form duly filled up, have to be sent. The examination occupies two days. The first day practical chemistry and dispensing, each of three hours, are taken, and if the candidate satisfies the examiners in these subjects, he is notified when to appear for the oral examination in botany, chemistry, materia medica, pharmacy, and prescription reading. This oral examination usually takes place after an interval of a few days. If the candidate fails to pass, he may enter at the next or any subsequent examination on the payment of a fee of 3*l.* 3*s.* Successful candidates are registered as chemists and druggists, and may use that title or any variant of it, or the title "Pharmacist." The certificate granted to him must be exhibited in any premises in Great Britain where he carries on, or manages, the business of a chemist and druggist. The certificate should, therefore, be carefully preserved.

There is another examination for the title "Pharmaceutical Chemist"—namely,

The Major Examination.

This is the original qualifying examination of the Pharmaceutical Society, instituted by its Charter and confirmed by the Pharmacy Act, 1852. Examinations are held in April and July only, in Edinburgh and London, and those who have passed the Minor examination are eligible to enter for it. The subjects are botany, chemistry and physics, and materia medica on a more advanced scale than the Minor examination. There is a written examination in each of the subjects and a practical, but if necessary the Board may also examine the candidates orally. A complete syllabus of the examination is given in the official pamphlet which deals with the Minor examination.

IRELAND.

The control of pharmaceutical education, examination, and registration in Ireland is entrusted to the Pharmaceutical Society of Ireland, 67 Lower Mount Street, Dublin. The principles of the Statutes in Ireland differ slightly from those of Great Britain, in so far as there

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are two distinct classes of qualified persons in pharmacy and the drug-trade. By the Pharmacy Act, 1875, a class of pharmaceutical chemists was instituted, who were authorised to retail poisons and compound medical prescriptions; while in 1890 another class, entitled "Registered Druggists," was created, and these, with chemists and druggists then in business, are authorised to retail and mix poisons, but not to compound medical prescriptions. In the case of persons who have entered pharmacy since January 1, 1907, and who wish

To become Pharmaceutical Chemists,

it is necessary that they should pass a Preliminary examination prior to the service in pharmacy—that is, prior to the four years' apprenticeship or experience which is required of candidates entering for the qualifying examination. The Society conducts its own

Preliminary Examination,

which is held in Dublin on the first Thursdays of January, April, July, and October, at 11 A.M. The fee, 2*l.* 2*s.*, has to be lodged with the Bank of Ireland to the credit of the Society, and the receipt forwarded to the Registrar, 67 Lower Mount Street, Dublin, with an application for entry to the Preliminary examination, at least fourteen clear days before the specified Thursday. The examination is in writing, and the subjects are:

Latin.—Translation into English (with parsing) of Cæsar's "Commentaries" (*De Bello Gallico*), First Book; or Virgil's "*Æneid*," First Book. Translation of an easy English sentence into Latin.

English.—English grammar, including orthography and parsing; an essay to write, also writing from dictation.

Arithmetic.—The first four rules, simple proportion, vulgar fractions, and decimals. British and metric weights and measures.

Algebra.—As far as simple equations, inclusive.

Geometry.—Including the First Book of Euclid.

Elementary Theoretical Chemistry, covering chemical action, combustion, water, the air, and the chief physical and chemical characters of certain gases which are specified in the Syllabus.

Besides the foregoing subjects the candidate must pass in one of the following optional subjects: (1) Elementary physics and mechanics; (2) the rudiments of botany, covered in the first fourteen chapters of Edmond's "*Lessons in Elementary Botany*"; (3) French, German, or any modern language.

In order to pass, candidates must take 50 per cent. in English, arithmetic, British and metric weights and measures, 30 per cent. in each subdivision of Latin and in the optional subject, and 40 per cent. on the entire course. No candidate can pass if he does not obtain 20 per cent. in each of the other compulsory subjects. A competent knowledge of grammar must be shown in each language taken. Those who obtain 70 per cent. of the total marks and not less than 50 per cent. in any subject pass in Honours. Candidates who fail may, after a six months' interval, enter for any subsequent examination on the payment of a fee of 10*s.* 6*d.* The Society accepts the following examinations in lieu of its own Preliminary examination:

Matriculation or Preliminary examination of the University of Dublin, Public Entrance examination (large certificate).

Royal University of Ireland, Matriculation examination.

Royal Colleges of Physicians and Surgeons, Ireland, Preliminary examination.

Intermediate Education Board for Ireland, Junior, Middle, or Senior Grade examinations in English, Latin, arithmetic, algebra, geometry, and Greek, or a modern language; or such other examination as shall be deemed by the Pharmaceutical Council as equivalent thereto, all the subjects having been passed at one time.

Pharmaceutical Licence Examination.

This is the qualifying examination. It is conducted in the Society's premises in Dublin in January, April, July, and October of each year. The fee for it, 5*l.* 5*s.*, has to be paid into the Bank of Ireland to the credit of the Society, and the receipt forwarded to the Registrar fourteen clear days before the examination, with the Preliminary examination certificate, a statutory declaration of having been engaged in compounding and dispensing for four years, certificates for practical chemistry, botany, and materia medica studies, and proof that the candidate is twenty-one years of age. These conditions differ from those of Great Britain, in so far as the four years' experience required must be *after* passing a Preliminary examination, and a curriculum of study is obligatory. The four years' experience in compounding and dispensing must be as an apprentice or assistant with, and in the sole employment

of, a pharmaceutical chemist, a registered chemist and druggist (Great Britain only), or an apothecary. It is not unusual for apprentices in Ireland to shift from one employer to another during the first four years, so as to get as much experience as possible. A copy of the regulations may be obtained from Mr. A. T. Ferrall, 67 Lower Mount Street, Dublin. These also provide for the examination of persons who have been apprenticed to registered druggists or chemists and druggists in Ireland, and enable them, after passing a Preliminary examination, to serve as assistants for two years with a pharmaceutical chemist or an apothecary keeping open shop, and then to enter for the examination. Students have also to attend a course of practical chemistry of not less than three months' duration at the laboratory of one of the following institutions:

* Pharmaceutical Society of Ireland, School of Chemistry.

* School of the Pharmaceutical Society of Great Britain.

Cecilia Street School of Medicine, Dublin.

City of Dublin Technical Schools.

Government School of Science, South Kensington.

* Queen's University, Belfast.

* Queen's University, Cork.

* Queen's University, Galway.

Royal College of Science for Ireland, Dublin.

Royal College of Surgeons in Ireland, Dublin.

Trinity College, Dublin.

Anderson's College Medical School, Glasgow.

* Royal Academical Institution, Belfast.

* The Municipal Technical Institute, Belfast.

* Mr. Templeton's School of Scientific Method and Chemistry, Belfast.

* Crawford Municipal Technical Institute, Cork.

Also a course of botany and materia medica at one of the above institutions indicated by an asterisk, or at the School of Physic, Trinity College, Dublin. The following are

THE SUBJECTS OF THE EXAMINATION:

Botany.—Recognition of the principal indigenous plants used in medicine, their natural orders, and characters of their several parts.

Materia Medica.—Recognition of B.P. drugs; their characters, active principles, sources, official preparations, and adulterations.

Chemistry.—Elementary laws of chemistry and physics, including equations. Recognition of B.P. chemicals; the processes by which they are obtained; qualitative analysis (including B.P. tests) and volumetric analysis; and a practical examination in these subjects. (The Council recommends Corby and Stewart's "*Physics and Chemistry*").

Practical Pharmacy.—Translation of Latin prescriptions, detection of dangerous doses, and compounding and dispensing. Processes of making and recognition of B.P. non-chemical preparations, and an intimate knowledge of the Sale of Poisons (Ireland) Act.

The examination is oral, practical, and in writing. The minimum pass percentage in pharmacy is 50, and in botany, materia medica, and chemistry 40 each, with 55 per cent. over all. Honours is given to those who take 70 per cent. of the total marks, with not less than 50 per cent. in any subject.

Assistants to Pharmaceutical Chemists.

This examination is conducted a few days after the Licence examination—in fact, those who enter for it have usually failed in that examination, and, while knowledge is fresh with them, take the less stringent one, which qualifies them to act as managers in the temporary absence of principals. The fee for the examination is 2*l.* 2*s.*, and the subjects are: Prescription reading and translation, practical dispensing, materia medica and quality of specimens, pharmacy (which is chiefly recognition of pharmacopoeial preparations which are not chemical), and the laws as to the sale of poisons.

Registered Druggists.

Every person who has served a term of not less than four years as an apprentice or assistant to a pharmaceutical chemist, chemist and druggist, registered druggist, or licentiate apothecary keeping open shop is eligible for entry to this examination, which is held in Dublin and Belfast (if twelve candidates enter for the latter) on the second Tuesdays of January, April, July, and October. Application has to be made to the Registrar at least fourteen days before the date of the examination, with the necessary certificates of service and a receipt for the examination-fee (2*l.* 2*s.*) paid to the Bank of Ireland to the credit of the Society. An additional registration-fee of

2l. 2s. has to be paid on passing the examination. The subjects of the examination are :

English orthography and composition.
Arithmetic and the weights and measures of the British Pharmacopœia.

The appearance and properties of the various drugs and chemicals in general use.

The Sale of Poisons (Ireland) Act.

The fee for re-examination is 10s. 6d. Successful candidates obtain the title "Registered Druggist," and may carry on business as such in the sale and mixing of poisons, but they may not compound or dispense medical prescriptions. They may serve for two years with a pharmaceutical chemist, and, having passed the Preliminary examination, may enter for the Licence examination.

SCHOOLS OF PHARMACY.

OUTLINES are given below of the pharmaceutical training available at the various schools in Great Britain, and for further information our advertisement-pages should be consulted or the syllabus obtained from the secretaries of the various institutions.

London.

The School of Pharmacy.—Staff: BOTANY, Mr. H. J. Jeffery, A.R.C.Sc. CHEMISTRY AND PHYSICS, Professor A. W. Crossley, D.Sc., Ph.D., F.R.S., Sec.C.S. (Dean). Assistant Lecturer: Mr. C. H. Warner, B.Sc., A.I.C. Demonstrators: Mr. C. H. Hampshire, Mr. Sydney Smith, and Mr. W. R. Pratt. PHARMACEUTICS, Professor Henry G. Greenish, F.I.C., F.L.S. Demonstrator: Mr. W. A. Storey. Systematic courses for the Minor and Major examinations begin on October 5, the former course continuing until the end of June and the latter until the end of March 1911. Students may, however, enter the school at any time and for any subject or part of the course, or for special courses. The fee for the elementary course is 32l. 11s., or 30l. to student-associates of the Society, and for the advanced course 18l. 18s., or 18l. to student-associates or members of the Society. Additional term for students who have completed the elementary course, 6l. 6s. Summer term for students who have completed the advanced course, 4l. 4s.

Muter's (South London) School of Pharmacy.—Founder: Dr. John Muter. Director: Mr. A. H. M. Muter, F.I.C., F.R.B.S. Principal: Mr. J. Thomas, B.Sc., A.R.C.S. Secretary: Miss G. Duckworth, L.L.A. Lectures and practical work for the Minor and Major examinations begin on September 8 and early in October, January, and April. The fees, 9l. 19s. 6d. for the long course and 8l. 8s. for the ordinary courses, are inclusive, even for the books provided for home reading. A short revision course of the October Minor begins during the third week in August: fee, 5l. 5s. Evening classes are held; fees, 1l. 5s. to 3l. Two special features in connection with the school are: (1) Its free Open Entrance Scholarship, the examination taking place at the beginning of September of each year; (2) its unique alternative system for the payment of fees, by which the student may, on payment of 4l. 4s., attend all lectures for the Minor, including the use of the microscopes and museum, until qualified, and obtain instruction in practical work by easy monthly or weekly payments. Address, 325 Kennington Road, London, S.E.

London College of Chemistry, Pharmacy, and Botany.—Principals: Mr. Henry Wootton, B.Sc., and Mr. A. Kirkland, Ph.C. Minor courses commence early in September, January and April; fee, 9l. 19s. 6d. Major courses of six months' and three months' duration are held in preparation for the April and July examinations; fees, 13l. 2s. 6d. and 6l. 16s. 6d. respectively. Revision course for the October Minor and evening classes and Preliminary courses are also held. Courses for the Apothecaries' Assistants' examination commence in August, October, January, April; fee for full course (six months), 10l. 10s.; for term of three months, 5l. 5s. Address, 323 Clapham Road, London, S.W.

South of England College of Pharmacy.—Principal: Mr. H. Lucas, Ph.C., F.C.S. Minor courses of three months' duration begin on September 28 and early in January and April; fee, 9l. 9s. Tutorial class starts on August 12 for the October examination; fee, 5l. 15s. 6d. Major courses extend from October to April (day), fee 15l. 4s. 6d., and October to July (evening), fee 8l. 8s. Evening classes commence on October 3, and correspondence classes are also conducted; fees, from 1l. 1s. per term. Six-month and three-month courses are given for the Apothecaries' Assistants' examination; fees, 10l. 10s. and 5l. 15s. 6d. respectively. Address, 186 Clapham Road, London, S.W.

The Westminster College.—Full courses can be obtained for the Minor and Major examinations, also postal tuition, and for the Apothecaries' Assistants' examination. For full

particulars apply to the Manager, Mr. G. S. V. Wills, 402 Clapham Road, London, S.W.

West Ham Municipal Technical Institute.—Principal: A. F. Hogg, M.A. Evening classes are held in pharmacy, materia medica, and dispensing. Fee, 35s. per course.

Instruction in pharmaceutical subjects is also given at the following institutions:

Brixton School of Chemistry and Pharmacy, 78 Stockwell Park Road, London, S.W.

Imperial College of Chemistry, 44 Imperial Buildings, Ludgate Circus, London, E.C.

The Provinces.

BARROW-IN-FURNESS.

Technical School.—The evening classes in theoretical and practical chemistry are suitable for pharmaceutical students. Secretary: Mr. W. Hutchinson, Town Hall.

BATH.

Bath and West of England College of Chemistry and Pharmacy.—Principal: Mr. David J. Williams, Ph.C., F.C.S. The new term, including foundation course, begins on September 5; fee, 9l. 9s. The fee for the January or April term is 8l. 8s. Preparatory postal tuition is offered; fees, 1l. 1s. to 5l. 5s. Evening classes are held; fees, 1l. 1s. to 2l. 10s. 6d. Major courses, three months 6l. 16s. 6d., and six months 12l. 12s. Apothecaries' Assistants' course, six months 9l. 9s., three months 5l. 5s. Address, 6 Cleveland Place East, Bath.

BIRMINGHAM.

Birmingham and Midland College of Chemistry, Pharmacy, and Botany.—A short special course begins on August 22. Other terms start October 3 and early in January and April. Major course and afternoon and evening classes are also held. Classes are also held for the Apothecaries' Hall examinations. Particulars from the Principal, Mr. G. L. Scott, Ph.C., 45 Newhall Street.

Municipal Technical School.—Courses in chemistry for pharmacy students are given on Wednesdays from 2.30 to 5.30 p.m. by Messrs. A. W. T. Hyde and D. F. Twiss; session fee, 5s. for the first year and 7s. 6d. for the second. The C. J. Woodward Memorial Prize of 5l. 10s. is awarded to the student who does best in the sessional examination of the second year. Evening classes in elementary botany are held also; fee, 2s. 6d. Secretary: Mr. Geo. Mellor, Suffolk Street.

University.—Instruction in the subjects of the Minor and Major examinations is also given at the University, where the Professor of Chemistry is Dr. Percy F. Frankland, F.R.S.

BRADFORD.

Technical College.—Head of Department: Professor W. M. Gardner, M.Sc. Lecturer in Botany, Materia Medica, and Pharmacy: Mr. W. West, F.L.S. The pharmaceutical course for the Minor extends over two years, and is arranged so that apprentices can prepare for the examination without giving up shop-duties, the classes being held in the afternoons and evenings. Fees, day course 5l. 10s., and evening course 7s. 6d. per session.

BRIGHTON.

Technical College.—A pharmaceutical course for Minor students can be obtained at this college. For particulars apply to the Principal, Dr. C. H. Draper, B.A., Richmond Terrace.

BRISTOL.

University.—Principal: Professor C. Lloyd Morgan, LL.D., F.R.S. Lecturer in Pharmacology: Mr. O. C. M. Davis, Ph.C. A complete day-course for the Minor is provided, extending from October till July. Fee, 14l. 14s., including registration. Further particulars from the Registrar, Mr. James Rafter.

Merchant Venturers' Technical College.—Principal: Professor J. Wertheimer. Evening classes in botany, chemistry, and physics suitable for pharmaceutical students are held. Fees, 5s. and 7s. 6d. for each class.

DERBY.

Technical College.—Principal: Mr. F. W. Shurlock, B.A., B.Sc. Mr. S. Taylor, Ph.C., gives instruction in pharmacy and materia medica on Wednesdays. Fee, 1l. 1s. per term. Chemistry and botany classes are also available.

EXETER.

Royal Albert Memorial College.—Principal: Mr. A. W. Clayden, M.A. A complete Minor course (day or evening) can be obtained here. Fee, 10l. 10s. per annum.

LANCASTER.

Technical School, Storey Institute.—Principal: Mr. William French, M.A., F.I.C. Classes in botany, chemistry, and physics are arranged for Preliminary and Minor examinations. Fee, 7s. 6d. for complete course in each subject.

LEEDS.

College of Pharmacy.—Principal: Mr. F. Pilkington Sargeant, Ph.C., F.C.S. Full-time, part-time, weekly, and evening classes are held, also a ladies' class. The winter session begins on October 11, and full-time courses commence next January and April. Fees: full time, 14*l.* 14*s.* for six months, 8*l.* 8*s.* for three months; weekly or evening, 4*l.* 4*s.* for six months; ladies', 9*l.* 9*s.* for six months.

Central Technical School.—Head-master: Mr. R. E. Barnett, B.Sc. A Minor course covering two sessions on three evenings a week commences on September 19. Fee, 3*l.* per session. Preparatory course, 7*s.* 6*d.* per session. Mr. J. H. Gough, Ph.C., undertakes the special instruction in materia medica and pharmacy. Address, Leeds Institute, Cookridge Street.

University.—The chemistry, physics, and botany courses are suitable for pharmacy students. Mr. Gough is demonstrator in practical pharmacy.

LEICESTER.

Municipal Technical School.—Students are prepared in the science subjects of the Minor examination.

LIVERPOOL.

School of Pharmacy.—Principal: Mr. H. Humphreys Jones, Ph.C. Day and part-time classes are held. A short revision course starts on August 15; fee, 4*l.* 4*s.* The full winter term begins on September 13 and continues till Christmas. Courses also begin in January and April; fee, 9*l.* 9*s.* The fee for two consecutive courses is 16*l.* 16*s.* The part-time classes are held on Wednesdays from 3 to 10 p.m., beginning September 14; fee for course, 3*l.*, or session, 7*l.* 10*s.* Address, 18 Colquitt Street.

University.—Complete courses for the Pharmaceutical Society's examinations commence each year in October. The Junior course is adapted to the Minor, and the Senior course is suitable for the Major. Courses in chemistry, botany, materia medica, and pharmacy may be paid for separately or a composition fee of 18*l.* 18*s.* for the session's pharmacy course. Mr. Prosper H. Marsden is the lecturer in pharmacy and materia medica. For particulars apply to the Registrar.

MANCHESTER.

University.—The professional staff of the Pharmaceutical Department consists of Dr. E. Rutherford, F.R.S. (physics), Professors H. B. Dixon, F.R.S., and W. H. Perkin, F.R.S. (chemistry), Dr. R. B. Wild, M.Sc. (materia medica and pharmacy), Dr. F. E. Weiss and W. H. Lang (botany), and Mr. James Grier, Ph.C., M.Sc. (pharmacy and pharmacognosy). The work for the Minor or Major examination extends over one winter session; fee, 15*l.* 15*s.* per session. Summer sessions can also be taken; fee, 4*l.* 4*s.* The degree of B.Sc. in pharmacy is granted. For particulars see p. 267.

Northern College of Pharmacy.—Principals: Mr. Geo. Clayton, Ph.C., F.C.S., and Mr. F. Lawson, B.Sc., Ph.C. A short revision course for the October Minor starts on August 22; fee, 4*l.* 14*s.* 6*d.* Four-month and seven-month courses commence simultaneously on September 6; fees, 10*l.* 10*s.* and 15*l.* 15*s.* respectively. Afternoon, once-a-week, and evening courses commence the first week in September and January; fees, 2*l.* 10*s.* to 4*l.* 4*s.* Courses of three months' duration commence in October, January, and April; fee, 9*l.* 9*s.* Major courses are also given. Address, 100 and 102 Burlington Street, Manchester.

Manchester College of Pharmacy.—Director: Mr. C. Turner, Ph.C., 225*a* and 227*a* Oxford Road.

NEWCASTLE-ON-TYNE.

North of England School of Chemistry and Pharmacy.—Principal: Mr. J. Stableford Hill, Ph.C. A short course for the October examination begins in August; fee, 5*l.* 5*s.* Three months' terms commence on first Monday in October, January, and April; fee, 8*l.* 8*s.* Evening (three per week) and Wednesday afternoon classes are held; fee, 3*l.* 3*s.* per term. Major course, 7*l.* 7*s.* per term. Address, 55 Northumberland Street.

NOTTINGHAM.

School of Pharmacy.—Principal: Mr. S. Royce, Ph.C. A four-months' Minor course begins on September 1 (fee, 9*l.* 9*s.*), and other three-month courses start at the beginning of each quarter (fee, 8*l.* 8*s.*). Evening classes and afternoon classes are held; fees, 1*l.* 1*s.* to 2*l.* 7*s.* 6*d.* Address, 13 Victoria Street.

University College.—Classes in all Minor and Major subjects can be obtained. Registrar: Mr. P. H. Stevenson.

PLYMOUTH.

Municipal Science Schools.—Principal: Mr. J. B. Brown, B.Sc. The evening pharmaceutical courses in chemistry and botany cover four years. Fee, 10*s.* per session.

READING.

University College.—Day and evening courses suitable for pharmaceutical students can be taken in chemistry, botany,

and materia medica. Fees, day course, 20*l.* per session, and evening classes, 5*s.* to 7*s.* 6*d.* per subject. Particulars from the Registrar.

SHEFFIELD.

University.—The classes in botany, materia medica, and chemistry are available for students of pharmacy. Apply to the Registrar for prospectus.

SOUTHAMPTON.

Hartley University College.—Principal: Dr. Spencer W. Richardson, M.A. Courses of chemistry, botany, and physics suitable for the Minor and Major examinations can be arranged for. Several good scholarships are offered.

STOKE-ON-TRENT.

North Stafford School of Chemistry and Pharmacy.—Next term begins on September 6. Apply to the Principal, Mr. E. Griffiths, Ph.C., for particulars, at Kids Grove, Stoke-on-Trent.

WOLVERHAMPTON.

Municipal Science and Technical School.—Day and evening classes in chemistry, physics, and botany are available for students of pharmacy.

SCOTLAND.

ABERDEEN.

Robert Gordon's College School of Pharmacy.—Head Teacher: Mr. Gilbert Simpson, Ph.C. A term for the October Minor begins on August 22 (fee, 3*l.* 3*s.*), and ordinary courses begin on October 5, January 5, and April 5 (fee, 7*l.* 7*s.*, and 6*l.* 6*s.* per term after the first). Evening classes begin on October 10; fees, 10*s.* 6*d.* to 1*l.* 1*s.* per subject.

EDINBURGH.

Royal Dispensary and School of Pharmacy.—Principal: Mr. William Duncan, Ph.C., F.C.S. A revision course commences in August. Full terms begin in October, January, and April; fee, 8*l.* 8*s.* per term. Evening classes (Mondays, Tuesdays, and Thursdays, at 8.30) begin in September; fee, 3*l.* 3*s.* per term of three months. Major course (three months); fee, 10*l.* 10*s.* Address, 21 Richmond Street.

Central School of Pharmacy.—Principal: Mr. W. Beaverville Cowie, Ph.C., F.C.S. A short course of instruction for the Minor examination begins on August 16 and the winter session opens on October 5, other terms commencing in January and April. Day and evening classes are held. Fees: Day, 8*l.* 8*s.*; evening, 3*l.* 3*s.* per term. Address, 26 Clyde Street, Edinburgh.

Heriot-Watt College.—Principal: Dr. A. P. Lawrie. Mr. William Duncan, Ph.C., F.C.S., lectures on pharmaceuticals on Tuesday evenings at 8.30, beginning on September 28. The fee is 5*s.* per session. Day and evening courses in chemistry, botany, and physics are also given. Address, Chambers Street, Edinburgh.

GLASGOW.

School of Pharmacy.—Principal, Mr. John Lothian, Ph.C. A short course for the October examinations begins on August 15; fee, 4*l.* 4*s.* Full three-months' courses for the Minor and Major begin on October 3; fee, 8*l.* 8*s.* Evening classes also commence on October 3; fees, 1*l.* 1*s.* to 3*l.* 3*s.* per quarter. Evening classes for the Preliminary examination (two evenings weekly), conducted by Mr. Malcolm McKinnon, M.A., start on September 22; fee, 1*l.* 1*s.* per quarter. Address, 180 West Regent Street.

IRELAND.

Approved classes of instruction in certain subjects for the Licence examination are held in the educational establishments mentioned below.

Pharmaceutical Schools of Chemistry, Botany, and Materia Medica, 67 Lower Mount Street, Dublin. Directors: PRACTICAL CHEMISTRY SCHOOL, Professor P. Kelly, L.P.S.I. MATERIA MEDICA, Dr. J. S. Ashe, L.R.C.P. & S.I., L.P.S.I. The fees for the courses to meet the Society's regulations are: Practical chemistry (six months), 6*l.* 6*s.*; practice course (three months), past students, 2*l.* 2*s.*, students of other schools, 3*l.* 3*s.*; botany and materia medica (three months), 2*l.* 2*s.* The winter course begins on October 1. The practical chemistry class is held on Monday, Wednesday, and Friday evenings. A day class (three months) commences on April 1; fee, 6*l.* 6*s.* A day practice course also begins in April. The botany and materia medica classes are held on Tuesday and Thursday evenings, with occasional Saturday demonstrations. Printed particulars can be had by applying to the Registrar, 67 Lower Mount Street, Dublin.

Belfast Municipal Technical Institute.—Lectures in chemistry, practical chemistry, botany, materia medica, and pharmacy can generally be taken in the pharmaceutical department of this Institute. For particulars apply to the Principal.

School of Scientific Method and Chemistry, The Gables, Botanic Avenue, Belfast.—Principal, Mr. S. Templeton, Assoc.R.C.S., F.I.C. Full courses of instruction for the Licence examination of the Pharmaceutical Society begin on September 19 and January 2. Fees: Chemistry, 1*l.* 1*s.*; practical chemistry (100 hours), 4*l.* 4*s.*; botany and materia medica, 2*l.* 2*s.*; pharmacy, 1*l.* 1*s.* A revision class meets daily six weeks previous to each examination. Sessional students are admitted free to this class; fee to other students, 4*l.* 4*s.*

Supplemental Pharmaceutical Information.

Apothecaries' Assistants.

Society of Apothecaries, Blackfriars, London, E.C.—An examination for a certificate of qualification in compounding and dispensing medicines begins on the fourth Mondays in January, April, July, and October. The candidate must be eighteen years old, as attested by a certificate accompanying the form of entry. The entry-form must be filled and returned with the proper examination-fee (5*l.* 5*s.* for first appearance and 3*l.* 3*s.* for re-examination) at least fourteen days before the date of examination. A certificate must also be sent showing that special instruction has been taken in practical pharmacy for six months. The latter declaration must be signed by a registered medical practitioner, or an assistant of the Society holding a public appointment, or a legally qualified chemist. The examination is in two parts—oral and practical—comprising the compounding and dispensing of medicines; chemistry; materia medica and pharmacy; and the translation of prescriptions. A copy of the regulations can be obtained on written request to the Secretary, Mr. Frank Haydon, L.R.C.P.

Apothecaries' Hall of Ireland, 40 Mary Street, Dublin.—An examination for the certificate of assistant is held on the first Friday of each month except August. Candidates must be eighteen years of age, and have spent two years at practical pharmacy under the superintendence of a registered apothecary or pharmaceutical chemist, and show that they are of good moral conduct. The subjects of the examination are: Practical and theoretical pharmacy, materia medica, antidotes for poisons, pharmaceutical chemistry, and the metric system of weights and measures. Notice of intention to appear must be given to the Secretary at the above address at least seven days prior to the examination. The fee is 2*l.* 2*s.* Re-examination costs 1*l.* 1*s.*

Degrees in Pharmacy.

B.Sc. (PHARM.) MANCHESTER.—Three years' attendance (after Matriculation, but certain exemptions from the University Preliminary are allowed, including the London Matriculation examination) in the Pharmaceutical Department of Owens College is required. The course of instruction prepares the student to take the Minor examination (first year), the Major examination (second year), and to graduate in three years. To enter for the degree of B.Sc. the candidate must present certificates of having attended the following courses:

(1) *First Year.*—Chemistry, physics, botany, and pharmaceutical laboratory.

(2) *Second Year.*—Chemistry (final standard), botany (final standard), and materia medica (advanced).

(3) *Third Year.*—Chemistry and any two of the following: Pharmacology, bacteriology, toxicology, analysis of food and drugs.

Candidates must present themselves for the Intermediate examination at the end of their first year of study after passing the Matriculation examination. The subjects are: (i) Physics with practical work; (ii) chemistry with practical work; (iii) botany with practical work.

The subjects of the Final examination are: (i) Chemistry, including pharmaceutical chemistry; (ii) two of the following: Botany (including pharmaceutical botany), materia medica, pharmacology, bacteriology, toxicology, analysis of food and drugs.

B.Sc. (PHARM.) GLASGOW.—The conditions under which the degree of Bachelor of Pharmacy is granted are similar to those for science degrees—viz., seven courses of instruction must be taken in the prescribed subjects during at least three academical years; four of the seven courses must be taken at the Glasgow University, but the remainder can be entered upon at approved institutions. A detailed statement of the studies recommended is contained in the regulations for the degree (published by Messrs. J. MacLehose & Sons, 61 St. Vincent Street, Glasgow). Two examinations which must be passed are as follows:

First Science Examination in mathematics or biology (i.e., zoology and botany), natural philosophy, and chemistry. Candidates may present themselves in any one or more of these subjects at any examination.

Final Science Examination in chemistry, botany, materia medica, and pharmacy.

Before entering for the Final, candidates must, *inter alia*, produce evidence of being chemists and druggists registered under the Pharmacy Acts, 1852 and 1868, or of being graduates in medicine. Degrees in pharmacy are not open to Irish pharmaceutical chemists.

Medicine.

A GENERATION since, the road between pharmacy and medicine was shorter and straighter than it is now. Then it was possible for a registered chemist and druggist to begin medical studies without passing a Preliminary examination, and even to be excused lectures and practice in some of the subjects, such as chemistry, botany, and pharmacy. The memory of this still lingers in the drug-trade, with the result that we have occasional inquiries from chemists, as well as from their apprentices and assistants, as to how far the preliminary requirements of the medical curriculum will be shortened by pharmaceutical experience and qualifications. At the outset, therefore, we have to state that the only exemption granted to registered chemists and druggists of the medical curriculum is attendance at classes on practical pharmacy. It is true that the Royal Colleges acknowledge attendance at chemistry classes at certain recognised schools which registered chemists may have been at, but the excuse is solely the reason that the person has attended these classes, and not that he is a registered chemist.

The only advantage that a pharmacist or a student of pharmacy has over others entering the medical profession is the knowledge of drugs which must sooner or later in the curriculum be mastered, while in some university towns they are able to take the subjects of the medical curriculum at a medical school while working in a shop—part-time situations especially being helpful to "keep the pot boiling." In this connection it is worth noting that apart from the universities there are institutions in the following towns at which one or more of the subjects of the medical curriculum may be taken, these institutions being recognised by the General Medical Council:

Bradford.—Technical College.

Brighton.—Technical Day College.

Bristol.—University College; Merchant Venturers' Technical College.

Cheltenham.—Ladies' University College.

Derby.—Technical College.

Exeter.—Royal Albert Memorial College.

Gloucester.—Municipal Technical School (day classes).

Halifax.—Municipal Technical School (day classes).

Huddersfield.—Technical College (day classes).

Hull.—Municipal Technical School (day classes).

Leicester.—Municipal Technical and Art School (day classes).

Norwich.—Technical Institute (day classes).

Nottingham.—University College.

Plymouth.—Municipal School of Science (advanced day classes).

Portsmouth.—Municipal College (day classes).

Preston.—Harris Institute.

Reading.—The College.

Rochdale.—Municipal Technical School (day classes).

Southampton.—Hartley College.

Swansea.—Technical College (day classes).

West Ham.—Municipal Technical Institute.

Cape Town.—South African College.

Johannesburg.—Transvaal University College.

The General Medical Council, whose headquarters are at 299 Oxford Street, London, W.—with branches in Scotland (Mr. James Robertson, 54 George Square, Edinburgh) and Ireland (Mr. Richard J. E. Roe, 35 Dawson Street, Dublin)—is entrusted by statute with the regulation of medical studies and registration of students and diplomates and graduates in medicine and surgery. A person cannot be registered as a medical practitioner unless he or she has obtained certificates of qualification in medicine, surgery, and midwifery from one or other of the qualifying bodies recognised under the Medical Acts. These, with the diplomas which they grant, are exclusively in Great Britain and Ireland, and are as follows, the titles appended being those granted in each case:

Royal College of Physicians of London.—L.R.C.P., M.R.C.P., F.R.C.P.

Royal College of Surgeons of England.—M.R.C.S., F.R.C.S.
(These two grant a conjoint diploma, L.R.C.P. and M.R.C.S.—the "double qual.")
Royal College of Physicians of Edinburgh.—L.R.C.P.E., M.R.C.P.E., F.R.C.P.E.
Royal College of Surgeons of Edinburgh.—L.R.C.S.E., F.R.C.S.E.
Faculty of Physicians and Surgeons of Glasgow.—L. and F. F.P.S.G.
(These three grant a conjoint diploma—the "triple qual.")
Royal College of Physicians of Ireland.—L., M., and F. R.C.P.I.
Royal College of Surgeons in Ireland and Apothecaries' Hall of Dublin.—L. and F. R.C.S.I. and L.A.H.
Apothecaries' Society of London.—L.S.A. or L.M.S.S.A. Apothecaries' Hall, Dublin.—L.A.H.
University of Oxford.—M.D., M.B., B.S., M.S., L.Med.
University of Cambridge.—Same as Oxford.
University of Durham.—Same as Oxford.
University of London.—M.D., M.B., B.S., M.S.
Victoria University of Manchester.—M.D., M.B., M.S.
University of Birmingham.—M.D., M.B., B.S.
University of Liverpool.—Same as Birmingham.
University of Leeds.—Same as Birmingham.
University of Edinburgh.—M.D., M.B., B.S., M.S.
University of Aberdeen.—Same as Edinburgh.
University of Glasgow.—Same as Edinburgh.
University of St. Andrews.—Same as Edinburgh.
University of Dublin.—M.D., M.B., L.Med., M.S., B.S., L.S., M.A.O.

The subjects which students must study and pass examinations in are also laid down by the General Medical Council, and it is provided that a period of five academic years—which is four years and nine months—must be spent in these studies, from the time of

REGISTRATION AS A MEDICAL STUDENT

until entering for the Final examination for the diploma or degree. For registration as a medical student it is necessary that the applicant should have passed an approved Preliminary examination in the following subjects:

English (grammar; paraphrasing; composition; questions on English history and geography).

Latin (grammar; translation into English from unprescribed Latin books; translation into Latin of a continuous English passage, and of short idiomatic English sentences). [In the case of natives of India or other Oriental countries, whose vernacular is other than English, an examination in a classical Oriental language may be accepted as equivalent to an examination in Latin.]

Mathematics (arithmetic; algebra; including easy quadratic equations; geometry, including the subject-matter of Euclid, Books i., ii., iii., and simple deductions).

One of the following subjects: (a) Greek (grammar; translation into English from unprescribed Greek books; translation into Greek of short idiomatic English sentences); or (b) a modern language (grammar; translation into English from unprescribed books; translation of a continuous English passage, and of short idiomatic English sentences).

The General Medical Council does not itself conduct an examination, but it recognises Preliminary and other examinations of the universities. For example, proof that one has passed the Final examination for a degree in arts or science of any university in the United Kingdom is accepted, but the examination required to be passed is stiffer than that which qualifies for registration as a student of pharmacy. For example, the Royal College of Preceptors' second-class certificate covering the required subjects is accepted by the Pharmaceutical Society of Great Britain, but the General Medical Council does not accept anything less than a first-class certificate, or the special Preliminary examination conducted by the college for medical students. The complete list of examinations will be found in the Regulations of the Council in regard to the Registration of Medical and Dental Students, published by Spottiswoode & Co., Ltd., 5 New Street Square, London, E.C., at 6d. No one is registered as a medical student until he has passed an approved examination and has actually commenced his medical studies in a recognised institution, and the five years' curriculum does not begin to count until the student is registered as such. Fifteen days' grace is allowed. For example, if a college term begins on October 1, the student has a fortnight after that to register as from October 1. He must also have attained the age of sixteen years. Forms

of application for this registration are furnished by most medical schools.

The Medical Curriculum.

The course of study laid down by the General Medical Council and followed with modifications in parts by universities and the Royal Colleges is graduated, so that students begin with elementary science, biology, chemistry, and physics, and then go on to anatomy and physiology, thus obtaining a knowledge of the construction of the human body and all its functions—anatomy being spread over the second and third years of the curriculum (many experts say that a physician and surgeon cannot know the human frame too well) and simultaneously with the second year of it, such subjects as "Medicines and their Actions and Uses" are brought into the curriculum, with walking the hospitals for the study of medicine and surgery, midwifery, visiting out-patients, and so on. In fact, the third and fourth years are very busy ones for the student, and the work by this time becomes absorbing to those who are "born doctors," and they can fill in every minute of their time by work which delights them and in preparing for the examinations. At the end of the fourth year—supposing the student has passed each professional examination at the time laid down for it by the medical school—he may quit the school, if all the classes have been taken, and go into practice as an assistant to a medical practitioner; but this is seldom done, as the winter and summer sessions for the fifth year are generally spent in hospital practice of clinical surgery and medicine and in preparing for the Final examinations.

It is unnecessary to enter into details here regarding the nature of the subjects of the curriculum, for these who intend to go in for medicine had better refer to the pamphlets published by medical schools and the universities. As we have said, the conditions vary slightly with the qualifying bodies, and it is important that the student should know exactly what the conditions are. If he resides in a town where there are classes in biology and chemistry recognised by the General Medical Council, he should learn for himself whether these classes are accepted by the qualifying body whose diploma or degree he desires to obtain. Thus, if he is in England, he will probably desire to obtain the L.R.C.P. and M.R.C.S., and he will find by reference to the regulations of the Royal Colleges if there is an institution in his town where day classes in biology and chemistry covering the requirements laid down are held. He should, therefore—if economy is desired—take these classes and be signed up for them in accordance with the regulations. If in such cities as London, Manchester, Birmingham, Leeds, or Liverpool, the student will have an ample choice of schools at which the complete medical curriculum is provided, either for the "Double Qual." or for the degrees of the universities. So also in the university towns of Scotland and Ireland there are medical schools which have complete arrangements for medical education, and the courses of instruction laid down by them should be followed by the student. It should be noted, however, that in the case of university degrees the Matriculation examinations of the universities have to be passed. The fact that a person is a registered medical student does not necessarily admit him to the examinations for the degrees of the universities.

We are asked sometimes which is the easiest and cheapest qualification to obtain. Some of the examinations are stiffer than others, but none of them is easy. It is part of the duty of the General Medical Council to see that all are kept up to the standard. We give later full particulars as to the fees for the Professional examinations, as well as the inclusive charges at medical schools for the complete curriculum. In the latter case the figures are the minimum, and students have to reckon with about 50 per cent. additional expenditure for books, instruments, materials, etc. At least 150*l.* is required for collegiate and examination expenses, but 200*l.* is nearer the mark.

Medical Diplomas.

In this section we give concise particulars of the examination arrangements for the qualifications above-mentioned, which entitle those who obtain them to be registered as general medical practitioners by the General Medical

Council (fee, 5*l.*). In all cases the conditions as to Preliminary examination and the subjects and duration of the professional curriculum are substantially the same as those laid down by the General Medical Council. Candidates for any examination (*First* to *Final*) are required to produce the class certificates in the compulsory subjects, and one examination must be passed before another is taken. It is not usually necessary to take out the class subjects again if the candidate fails. The official regulations for the diploma or degree which the student is seeking should be referred to on that point. The diploma-granting bodies (*e.g.*, Royal Colleges in London) admit graduates in medicine on special terms—*i.e.*, passing the Final examination—but the universities do not reciprocate on this point.

L.R.C.P., M.R.C.S.—A diploma granted to men or women by the Conjoint Examining Board of the Royal College of Physicians of London, Fall Mall East, S.W., and the Royal College of Surgeons of England, 39-43 Lincoln's Inn Fields, W.C., commonly called the "double qual." There are three Professional examinations: *First*, in chemistry, physics, elementary biology, and practical pharmacy; *Second*, in anatomy and physiology (together); *Final*, in (a) medicine, including medical anatomy, pathology, practical pharmacy (unless taken previously), therapeutics, forensic medicine, and public health; (b) surgery, including pathology, surgical anatomy, and the use of surgical appliances; and (c) midwifery and diseases peculiar to women. The fees amount to 42*l.* For copies of the regulations apply to Mr. Frederic G. Hallatt, Secretary to the Conjoint Board, Examination Hall, Victoria Embankment, London, W.C. Before being admitted to the first examination candidates must pass an approved preliminary examination, and also show evidence of having received instruction in chemistry, physics, biology, and practical pharmacy, the first being taken at a recognised institution. In chemistry the instruction must extend over 180 hours, and include laboratory work; while in physics and biology 120 hours with practical work is the necessary condition. The courses need not run concurrently, nor is it necessary to complete them within one year. The instruction in practical pharmacy may be received at any time before examination, but must be given by a registered medical practitioner, or by a member of the Pharmaceutical Society of Great Britain, or in a public hospital, infirmary, or dispensary. Six months' instruction at a recognised institution other than a medical school will be counted as part of the curriculum if taken after the Preliminary examination.

L.R.C.P.E., L.R.C.S.E., L.F.P.S.G.—The diplomas of the following three co-operating bodies—the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow—can by arrangement be taken in one series of examinations held in Edinburgh or in Glasgow, or in Edinburgh and Glasgow. The arrangement is in accordance with Section XIX. of the Medical Act, 1858, and received the special sanction of the General Medical Council in 1884. The examinations are open to both sexes. Each of the three co-operating bodies grants single diplomas to candidates who already possess another and opposite diploma in medicine or surgery, as the case may be, but it should be noted that these single diplomas do not confer the right to registration except as qualifications additional to those already on the register. The examinations are: *First*, in physics, chemistry, and elementary biology; *Second*, in anatomy and physiology, including histology; *Third*, in pathology and materia medica with pharmacy; *Final*, in medicine, including therapeutics, medical anatomy, and clinical medicine; surgery, including surgical anatomy, clinical surgery, and diseases and injuries of the eye; midwifery and diseases of women and of new-born children; and medical jurisprudence and public health. The sum total of the fees is 30*l.* Before admission to the first examination, a preliminary examination approved by the General Medical Council must be taken before proceeding to the curriculum, which is again that of the General Medical Council, and occupies five winter and summer sessions. The instruction required in practical pharmacy must extend over two and a-half months' instruction, "which shall include not less than twenty-five meetings, and which may be attended at a medical school or public hospital laboratory or dispensary, or under a registered pharmaceutical chemist, or registered medical practitioner who dispenses medicines to his patients." Copies of the regulations can be obtained from Mr. James Robertson, solicitor, 54 George Square, Edinburgh, and Alexander Duncan, B.A., LL.D., Faculty Hall, St. Vincent Street, Glasgow.

L.M.S.S.A.—The holders of the diploma granted by the Society of Apothecaries of London are now designated "Licentiate in Medicine and Surgery of the Society of Apothecaries, London," instead of "Licentiate of the Society of Apothecaries," as formerly. Two examinations have to

be passed: A *Primary* (in two parts)—(a) elementary biology, chemistry (including chemical physics and practical chemistry), materia medica, and pharmacy; (b) anatomy, physiology, and histology. *Final* (in two sections, the first being in three parts)—(a) surgery, surgical pathology and anatomy; (b) medicine (including therapeutics, pharmacology, and prescriptions), pathology and morbid histology, forensic medicine, hygiene, vaccination, and mental diseases; (c) midwifery, gynaecology, diseases of new-born children, and obstetric instruments and appliances. The Second section is in two parts: (a) clinical surgery; (b) clinical medicine and surgical anatomy. In the *Primary*, part (a) may be passed at any time after registration as a student (instruction before such registration is not recognised), and part (b) after twelve months' practical anatomy. In the First section of the *Final*, parts (a), (b), and (c) may be taken at separate examinations and in any order; but they must be passed before the Second section is taken, and not earlier than forty-five months after registration. The Second section cannot be passed before the end of the fifth year. For regulations, with synopses, address Mr. Frank Haydon, L.R.C.P., Secretary to the Court of Examiners, Apothecaries' Hall, Blackfriars, London, E.C.

L.A.H.—The qualification granted by the Apothecaries' Hall of Ireland requires the four Professional examinations in medicine, surgery, midwifery, and pharmacy to be passed, in addition to a recognised Preliminary examination in general education. The subjects of the examinations are: *First*, chemistry, physics, and biology; *Second*, anatomy, physiology, and histology; *Third*, pathology, medical jurisprudence and hygiene, materia medica, and pharmacy; *Final*, medicine, surgery (including ophthalmic surgery), midwifery, and gynaecology. Total fees, 22*l.* 1*s.* The regulations and syllabus can be had from the Registrar, Apothecaries' Hall, 40 Mary Street, Dublin.

Medical Degrees.

Aberdeen, Edinburgh, Glasgow, and St. Andrews.—The conditions of entry at the above Universities are the same. Before commencing his studies, the student must pass a Preliminary examination (held in March and September) in English, Latin, elementary mathematics, and Greek or French or German; fee, 10*s.* 6*d.* Certain degrees in arts and sciences of Universities of the United Kingdom and of the Colonies and India are recognised. The degrees conferred after examination by the Universities to their own students only are M.B., Ch.B., M.D., and Ch.M. At least two of the five years' curriculum, and at least eight of sixteen specified subjects for M.B., Ch.B., must be spent or taken in the University granting the degree, or some other University or College recognised by the University Court. There are four Professional examinations—(1) Botany, zoology, physics, and chemistry; (2) anatomy, physiology, materia medica, and therapeutics; (3) pathology and medical jurisprudence and public health; (4) surgery and clinical surgery, practice of medicine, and clinical medicine and midwifery. The total fees are 23*l.* 2*s.* For particulars, address Mr. D. R. Thom, M.A., Secretary, The University, Aberdeen; The Dean of the Medical Faculty, The University, Edinburgh; Professor Muir, M.A., M.D., Dean of the Faculty of Medicine, The University, Glasgow; and The Dean of the Faculty of Medicine, University College, Dundee.

Aberystwyth, Bangor, Cardiff.—The University College of Wales, Aberystwyth; the University College of North Wales, Bangor; and the University College of South Wales and Monmouthshire are constituent colleges of the University of Wales, which grants the degrees of M.B., Ch.B., and a diploma in public health. The scheme of study comprises two parts, each extending over three years, and of the entire scheme at least three academic years must be pursued in one of the University Colleges. The *First* includes physics, chemistry, botany, and zoology (preliminary subjects), and organic chemistry, anatomy, and physiology (ancillary subjects), and the *Second* pathology, bacteriology, pharmacology, and medicine. For further particulars apply to the Registrar of the University of Wales, University Registry, Cathay's Park, Cardiff, or to the constituent colleges.

Belfast.—The Queen's University of Belfast grants six degrees in Medicine—M.B., B.Ch., B.A.O., M.D., M.Ch., M.A.O. Candidates for the degrees must be Matriculated students of the University and have completed the prescribed five years' curriculum (of which three years must be taken at the University), and have passed four medical examinations. The total fees for the degree amount to 16*l.* 16*s.* A diploma in public health is also granted; fees, 7*l.* 7*s.* Full particulars from Professor Milroy, Dean of the Faculty of Medicine, Queen's University of Belfast.

Birmingham.—The degrees granted are M.B., Ch.B., M.D., Ch.M., and also a B.Sc. and a diploma (D.P.H.) in the subject of public health. Candidates must pass the University Matriculation examination (held in June and

September) in chemistry or experimental mechanics, English language, literature and history, Latin, mathematics, and a foreign language (or an approved examination). Of the five years' curriculum, three or four (according to circumstances) must be passed at the University. Candidates may enter the Professional examination in chemistry and physics before commencing residence in the University, but after registering as medical students. There are five Professional examinations, the fee for the first four being 2*l.* each, and for the Final 8*l.* Address, Mr. Geo. H. Morley, Secretary's Office, The University, Birmingham.

Cambridge.—The degrees conferred are M.B., B.C., M.D., and M.C. Candidates for M.B. and B.C. are not necessarily obliged to proceed to the B.A. degree, but nearly all medical students graduate also in Arts. Otherwise they must pass the previous examination or other examination accepted by the University, and in all cases must have followed five years of professional study. The full curriculum can be obtained at Cambridge, but residence at the University for nine terms (three years) only is required, and the student must take at least in each term two courses of lectures or practical in the subjects of the Professional examinations, of which there are three for M.B. The *First* (in three parts) in chemistry, physics, and elementary biology; *Second* in anatomy and physiology; and *Third* (in two parts) in pharmacology and pathology, and surgery, midwifery and diseases of women, and principles and practice of physic. The examination-fees amount to 12*l.* 12*s.* The two years of study out of the University is usually purely professional work taken at a London medical school or at any medical school in the kingdom, in certain hospitals, or in recognised medical schools abroad. The M.B. is a complete qualification—i.e., it is not required to take B.C. for registration as a medical practitioner. Diplomas in public health and tropical medicine are also granted. Address, The Registry of the University, Cambridge.

Cork, Dublin, Galway, and Maynooth.—The University Colleges of the first three towns and St. Patrick's College, Maynooth, are constituent colleges of the National University of Ireland, which issues the degrees of M.B., M.D., B.Ch., M.Ch., B.A.O., and a diploma and degree in public health. Candidates for degrees must pass the Matriculation examination of the National University or other examination approved by the G.M.C., and spend five years in professional study, of which three must be taken at one or more of the constituent colleges of the University. There are four Professional examinations. Address, the Secretaries of the constituent colleges. The University of Dublin (Trinity College) also grants degrees in medicine, surgery, and obstetrics, and diplomas in these as well as public health. For particulars address the Registrar of the School of Physic.

Durham.—The University of Durham College of Medicine is at Newcastle-on-Tyne, and it grants two diplomas and six degrees, including Bachelor and Doctor of Hygiene. Candidates for the medical degrees must pass the University's Matriculation examination or other recognised examination, among which are the Matriculation examinations of the Universities of London, Manchester, Liverpool, Leeds, Sheffield, Wales, and Birmingham. Also certain Senior Local examinations and Leaving Certificates. For the degree of M.B., at least one of the five years of professional education must be spent at the College of Medicine, Newcastle-on-Tyne. There are four Professional examinations; fees, 25*l.* Address, Dr. Robert Howden, Secretary, The College of Medicine, Newcastle-on-Tyne.

Leeds, Liverpool, and Manchester.—The Universities grant the degrees of M.B. and Ch.B., and have in association a Matriculation examination (held in July and September; fee, 2*l.*), the subjects of which are English (language or literature) and English history, mathematics, Latin, and two of the following subjects, one of which must be a language: (1) Greek; (2) French; (3) German; (4) some other modern language approved by the Board; (5) elementary mechanics; (6) chemistry; (7) geography; (8) natural history. There are certain exemptions, and certificates are issued for the purpose of registration as students by the G.M.C. to candidates who have satisfied the examiners in English subjects, mathematics, Latin and another language, although they may not have passed the Matriculation. Five years' curriculum is necessary, and of these two years must be spent in the University. The Professional examinations to be passed are three (Leeds and Liverpool) or four (Manchester) in number, the Third and Final examinations at Manchester (as given below) corresponding to the Final examination at Leeds or Liverpool. The examination-fees amount to 15*l.* *First*, chemistry and physics and biology; *Second*, anatomy and physiology; *Third*, pathology, pharmacology and therapeutics, and hygiene; *Final*, medicine, surgery, midwifery and gynaecology, and forensic medicine. D.P.H. diplomas are also issued, and at Liverpool University a diploma of tropical medicine (D.T.M.) is also granted. For particulars as to

Matriculation apply to the Secretary, and regarding the Medical curriculum to the Dean of the Medical Faculty at the respective Universities.

London.—The degrees of M.B., B.S., are conferred by the University of London (South Kensington, S.W.) upon external and internal students. The latter study under the direct control of the University or any one or more of the appointed or recognised teachers of the University; while external students are persons who pursue their medical studies at Institutions recognised by the University. Practically every medical school in the British Isles is recognised for registration as an internal student. In all cases, however, the Matriculation examination or Higher Standard School examination of the University, or other examinations accepted by the University in lieu thereof, must be passed before the five and a half years' curriculum is commenced. External students must also be engaged in their studies four and a half years subsequent to passing the *First* examination for medical degrees. All students should read the regulations respecting the courses of study, obtainable from the Academic Registrar at the University, price 3*d.* There are three Professional examinations: *First*, in inorganic chemistry, physics, and biology, one academic year after registration; *Second* (Part I.), organic and applied chemistry, (Part II.) anatomy, physiology, and pharmacology (including pharmacy and materia medica), which may be taken eighteen months after the *First* Professional examination and after passing Part I.; and the *Third*, or *Final*, consists of (Group I.) medicine, pathology, forensic medicine, and hygiene, and (Group II.) surgery, midwifery, and diseases of women. Either group may be taken first, or both together. Total fees, 25*l.*

Oxford.—The curriculum for the degree of Bachelor of Medicine at the University of Oxford extends over a period of seven years, in the course of which the student takes the B.A. degree in the Natural Science School, and finishes with the degree of B.M. The subjects of study throughout are those of the medical curriculum and responses. Diplomas in ophthalmology and public health are also issued after examination. Dr. W. Osler, Regius Professor of Medicine, University Museum, Oxford, issues a leaflet concerning the curriculum.

Sheffield.—The conditions required for the degree of Bachelor of Medicine are similar to those at Leeds, etc. Address, in respect to examinations, Mr. W. H. Gibbons, M.A., the Registrar; and, on other matters, The Dean of the Faculty of Medicine, The University, Sheffield.

Medical Instruction.

ABERDEEN.—*The University Faculty of Medicine* at Marischal College affords complete instruction, clinical practice being obtained in the Royal Infirmary (230 beds) and other special institutions; fees (including class, hospital, and all examination fees for five years' curriculum, and fees for degrees) about 150*l.* Dean: Dr. W. Finlay. The prospectus can be obtained from the Secretary, Mr. Donaldson R. Thom, M.A., Marischal College, Aberdeen.

ABERYSTWYTH.—*University College of Wales*, a constituent of the University of Wales, which grants degrees in medicine and surgery. The Registrar is Mr. J. Mortimer Green.

BANGOR.—*University College of North Wales*, another constituent college of the University of Wales. For particulars of preliminary medical instruction address the Dean.

BELFAST.—*Queen's University of Belfast.*—The fees in the Faculty of Medicine (including clinical instruction) are about 95*l.* Dean of the Faculty, Professor Milroy.

BIRMINGHAM.—*University Faculty of Medicine.*—The curriculum is specially arranged for the degrees of the University, but students may qualify also for the degrees of other Universities and for the diplomas of licensing bodies. Clinical instruction is obtained at the General and Queen's Hospitals [together over 500 beds]. The composition-fees, covering the whole cost of the M.B. and Ch.B. degrees, amount to 154*l.* 19*s.* 6*d.* Dean, Professor Gilbert Barling, M.Sc., F.R.C.S.

BRADFORD.—*Technical College.*—Instruction is provided in Preliminary Scientific subjects.

BRIGHTON.—*Technical Day College*, for Preliminary Scientific subjects.

BRISTOL.—*The University Faculty of Medicine.*—The entire course of study required for the medical and surgical degrees of the University of London, the Conjoint Board, and the Society of Apothecaries is obtainable, with clinical practice, at the Royal Infirmary and General Hospital [together 470 beds]. Composition-fee for complete curriculum (including hospital practice), 159*l.* 15*s.* For full particulars write to The Dean of the Medical Faculty.

Merchant Venturers' Technical College, for Preliminary Scientific subjects.

CAMBRIDGE.—*University Medical School.*—The regulations, schedules, and lists of lectures may be obtained from the Registry of the University, Cambridge. Clinical practice is

obtained at Addenbrooke's Hospital [over 150 beds]. Inclusive expenses for an economical student, about 100*l.* per academical year.

Girton College, Newnham College.—Are recognised for Preliminary Scientific subjects.

CAPE TOWN.—*South African College.*—Is recognised for Preliminary Scientific subjects.

CARDIFF.—*University College of South Wales and Glamorgan*, a constituent college of the University of Wales. The first three years of the medical curriculum can be taken at Cardiff. Fees for the Preliminary Scientific and the Intermediate examination of the University of London, 57*l.* 10*s.*; for the Conjoint Board (First and Second examinations), 41*l.* 10*s.* Hospital practice is obtained at Cardiff Infirmary. Dean of the Faculty of Medicine, Dr. D. Hepburn. Registrar, Mr. J. Austin Jenkins, B.A., University College, Cardiff.

CHELTENHAM.—*Ladies' University College*, for Preliminary Scientific subjects.

CORK.—*University College*, a constituent college of the National University of Ireland. In the Faculty of Medicine the fees for the college lectures and hospital attendance required amount to about 85*l.*, exclusive of examination-fees. Clinical practice is obtained at North and South Infirmaries [100 beds each], District Hospital [1,200 beds], and other local hospitals. Particulars from the Registrar, Professor J. P. Molohan, M.A.

DERBY.—*Technical College.*—The subjects for the Preliminary Scientific examination can be taken here.

DUBLIN.—*Trinity College* (School of Physic).—Students must have Matriculated before they can be admitted to the School of Physic or attend dissections; fees, 149*l.* 17*s.* Address, Professor H. W. Mackintosh, M.A., Registrar of the School of Physic, Dublin.

Catholic University Medical School, Cecilia Street, has been affiliated to the University College (Dublin), a constituent of the National University of Ireland.

Royal College of Surgeons' Schools of Surgery (which includes the Carmichael and Ledwich Schools).—The Schools of Surgery are attached by charter to the Royal College of Surgeons, being under the supervision and control of the Council. Total expense of triple qualification (including examination-fees), 160*l.* 13*s.* Registrar, Mr. G. F. Blake, St. Stephen's Green.

DUNDEE.—*University College.*—The whole of the medical curriculum in connection with the University of St. Andrews (*q.v.*) can be taken at this college. Clinical instruction is given at the Dundee Royal Infirmary [400 beds].

DURHAM.—See Newcastle-on-Tyne.

EDINBURGH.—*University Faculty of Medicine.*—The minimum elass and hospital fees for the complete curriculum for the M.B. and Ch.B. degrees amount to 115*l.*, and examinations (including Matriculation) cost another 23*l.* 7*s.* Hospital practice is obtainable at the Royal Infirmary, etc., 1,840 beds being available for clinical instruction. The syllabus can be had from the Dean or the Clerk to the Senatus.

Schools of Medicine of the Royal Colleges.—The courses of instruction required by the Edinburgh University and other Universities, also the Royal Colleges of Physicians and Surgeons of Edinburgh, London, and Dublin, are obtainable here, with special classes for women students. The minimum cost of the triple qualification, including examination fees, is 115*l.* Communications respecting the School should be addressed to Major D. G. Marshall, I.M.S., Dean of the School, 11 Bristo Place.

EXETER.—*Royal Albert Memorial College*, for classes in Preliminary Medical subjects.

GALWAY.—*University College.*—A constituent of the newly constituted National University of Ireland. The fees in the Faculty of Medicine are the same as at Cork. Clinical teaching is obtained at the Galway Hospital. For particulars address the Registrar.

GLASGOW.—*The University Faculty of Medicine and Queen Margaret College*, Hamilton Drive, Glasgow (School of Medicine for Women). Fees for M.B. and Ch.B., including Matriculation class fees, hospital attendance, and Professional examinations, about 140*l.* Clinical instruction is given at the Western Infirmary [595 beds] and Glasgow Royal Infirmary [588 beds]. Dean of the Faculty, Professor Muir, M.A. For information regarding the women's school address Miss Melville, of Queen Margaret College.

St. Mungo's College.—Medical School of Glasgow Royal Infirmary. The College buildings are situated within the grounds of the Royal Infirmary [620 beds], where clinical instruction is obtained. Fee for English and Scottish Conjoint qualifications, about 70*l.* The Carnegie Trust pays part of the fees on certain conditions. The Dean, T. K. Munro, will supply a detailed syllabus.

Western Medical School, 44 and 46 University Avenue, Hillhead.—Lectures and demonstrations are given in chemistry, anatomy, surgery, and medicine. Some of the classes qualify for graduation and for Scotch diplomas. Secretary, Mr. J. N. Morton, M.A.

Anderson's College Medical School, Dumbarton Road.—Clinical instruction is given at the Western Infirmary immediately adjoining the College, and also at the Royal Infirmary. The classes qualify for all the licensing bodies in the United Kingdom and the Universities (under certain conditions). The Carnegie Trust pays the fees of students under certain conditions apply to W. S. McCormick, Carnegie Trust Offices, Edinburgh). Calendar containing full details of fees on application from Professor B. G. Cormack, Hon. Secretary Medical Faculty.

HALIFAX.—*Municipal Technical School* (Day Classes), for Preliminary Medical studies.

HUDDERSFIELD.—*Technical College* (Day Classes), for Preliminary Medical studies.

HULL.—*Municipal Technical School* (Day Classes), for Preliminary Medical studies.

LEEDS.—At the *University* the approximate cost of education in the Faculty of Medicine is 195*l.* 6*s.* (this includes composition-fee for classes 73*l.* 2*s.* 6*d.*, examination-fees, books, and microscope). Clinical work is obtained at the Leeds General Infirmary [524 beds]. For further particulars address the Dean of the Medical Faculty.

LEICESTER.—*Municipal Technical and Art School* (Day Classes), for Preliminary Medical course.

LIVERPOOL.—*The University Faculty of Medicine* provides full courses for the entire medical curriculum. The clinical instruction is obtained at the Royal Infirmary and other local hospitals [together 1,127 beds]. The composition-fees for the M.B. and Ch.B. amount to 84*l.* 15*s.* for University students, with examination-fees an extra 15*l.* The hospital fee is 42*l.* The composition-fees for other students are different from those stated above.

LONDON.—The following medical schools and colleges are constituents of the University of London, where the whole or part of the instruction required for the medical degrees can be obtained:

Charing Cross Hospital Medical College, Chandos Street, W.C. [200 beds].—The approximate cost of medical education at this school for the Conjoint diploma is given in the prospectus as 199*l.* 5*s.*, this including composition-fee (120*l.* 15*s.*), examination-fees (42*l.*), books, and instruments fee. Various complete medical courses can be taken here. Clinical instruction only costs 77*l.* 14*s.* The Dean is Mr. F. C. Wallis, F.R.C.S., from whom further information can be obtained.

Guy's Hospital, London Bridge, S.E. [620 beds].—Fees about 160*l.* There is a residential college in connection with the medical school. Dean, Dr. H. L. Eason.

King's College Hospital Medical School, Lincoln's Inn, W.C.—Preliminary and intermediate portions are taken at King's College, but composition-fee can be arranged (147*l.* for University course, 141*l.* 15*s.* for Conjoint course). Fees for the course for the Final examinations, either for the M.B., B.S., of the University of London, or for the diplomas of the R.C.P. and R.C.S., 73*l.* 10*s.* Dean, Mr. Peyton T. B. Beale, F.R.C.S.

King's College Faculty of Science (Medical Division), Strand, W.C.—Fees for the University of London courses: First examination for medical degrees 26*l.* 5*s.*, second examination 57*l.* 15*s.* The Conjoint Board course fees are: First examination 21*l.*, second examination 57*l.* 15*s.* Dean, Professor W. D. Halliburton, M.D., F.R.S.

London Hospital Medical College, Turner Street, Mile End, E. [922 beds].—Fees, 126*l.* or 136*l.* 10*s.* in three instalments (sons of medical men 15*l.* 15*s.* less). Its position renders it one of the largest accident hospitals in the world. Warden, Mr. Munro Scott.

London (Royal Free Hospital) School of Medicine for Women, 8 Hunter Street, Brunswick Square, W.C.—Composition-fees for University of London degrees and Conjoint Board qualification 160*l.*, other courses 140*l.* The prospectus of the school gives details of fees for all courses for medical qualifications open to women. Clinical instruction at the Royal Free Hospital [165 beds]. Dean, Miss J. A. H. Cock, M.D.

Middlesex Hospital, Cleveland Street, W. [340 beds].—Composition-fees: for general students 141*l.* 15*s.*, for University of London students 152*l.* 5*s.* Dean, Dr. H. Campbell Thomson, F.R.C.P.

St. Bartholomew's Hospital and College, West Smithfield, E.C. [744 beds].—Fees, by a single payment, 173*l.* 5*s.*, or 47*l.* 5*s.* annually for four years. The complete course (preliminary, scientific, intermediate, and hospital practice) can be taken at this College. The total value of scholarships and prizes awarded annually is about 900*l.*, of which several are entrance scholarships in science and general education. New buildings, extending the hospital and containing additional accommodation for the medical college, were completed recently. Dean, Dr. T. W. Shore, B.Sc.

St. George's Hospital, Hyde Park Corner, S.W. [440 beds], with a convalescent branch at Wimbledon.—This is now a

purely clinical school; students entering for the full course carry out their preliminary studies through London University at either King's College or University College; annual composition-fee 31*l.* 10*s.*, entrance-fee for other students 10*l.* 10*s.* There are several entrance scholarships at this hospital. Dean, Dr. E. I. Spriggs.

St. Mary's Hospital, Cambridge Place, Paddington, W. [281 beds].—Fees for full curriculum for Conjoint Board 140*l.*, or for University degrees 145*l.* (5*l.* more if paid in instalments). Entrance scholarship examinations will be held on September 19 to 21. The winter session commences on October 3, when Sir A. Conan Doyle will present the prizes and awards. Dean, Mr. W. H. Clayton Greene, M.B., B.C., F.R.C.S.

St. Thomas's Hospital, Albert Embankment, S.E. [603 beds].—Fees for Preliminary subjects, 15*l.* 15*s.* per annum; second-year students, entrance 21*l.*, annual fee for all classes 31*l.* 10*s.*; fourth-year students (after second M.B.), entrance 10*l.* 10*s.*; annual fee 31*l.* 10*s.* Dean, Mr. Cuthbert Wallace, M.B., M.S. Secretary, Mr. G. Q. Roberts, M.A.

University College, Faculty of Medical Sciences, Gower Street, W.C.—Courses of instruction are given for the medical degrees as well as the University of London, examinations of the Examining Board of the R.C.P. and R.C.S. and other licensing bodies. Fees: University of London, First medical examination course 27*l.* 6*s.*, second examination course 60*l.* 18*s.* Conjoint Board and Society of Apothecaries courses, 5*l.* 5*s.* for the first course. Clinical instruction is taken at a medical school and hospital (*see* University College Hospital Medical School). Secretary, Mr. Walter W. Seton.

University College Hospital Medical School, University Street, Gower Street, London, W.C. [355 beds].—Fees: Final M.B. course, or Conjoint Board, 84*l.* 2*s.* Dean, Dr. H. Batty Shaw. Secretary, Mr. L. R. Thomas.

Westminster Hospital Medical School, Broad Sanctuary and Caxton Street, S.W. [215 beds].—Fees: Course for examinations of Conjoint Examining Board, 126*l.*, or 136*l.* 10*s.* for University of London curriculum. Dean of the School, Mr. R. E. Rock Carling, F.R.C.S. Information can also be had from Mr. W. Fryer, the Secretary of the Medical School.

Instruction in either or both Preliminary and Intermediate courses of medical study is also given at the *Bedford College*, York Place, Baker Street, London, W.; *Royal Holloway College*, Enfield Green, Surrey; *Royal College of Science*, South Kensington, S.W.; *Birkbeck Institute*; *East London Technical College*; *Central Technical College*; *Westfield College*; *South-Western Polytechnic Institute*, and *Battersea Polytechnic* (Day Classes). There are also several special post-graduate colleges in London.

MANCHESTER.—*University Faculty of Medicine*.—Clinical practice is obtained at the new Royal Infirmary [592 beds]. Fees for M.B., about 130*l.* Dean, Professor W. Stirling, M.D.

NEWCASTLE-ON-TYNE.—*University of Durham College of Medicine*.—Clinical instruction is given at the Royal Victoria Infirmary [400 beds]. Fees: 75*l.* 12*s.* (payable to the Secretary

and hospital-fees 32*l.* 11*s.* (payable to Dr. W. E. Hume). The Secretary is Professor R. Howden.

NOTTINGHAM.—*University College*, for Preliminary Scientific studies.

OXFORD.—The *University* medical curriculum generally extends over seven years, but it can be shortened to six years if the student is able to pass the preliminary chemistry and physics examinations at the end of his first term. The instruction in natural science is carried on for the most part at the Museum. The clinical work is taken at a metropolitan or provincial medical school. Intending students should interview Dr. W. Osler, the Regius Professor of Medicine at the University Museum.

PLYMOUTH.—*Municipal School of Science* (Advanced Day Classes), for Preliminary Scientific course.

PRESTON.—*Harris Institute*, for Preliminary Scientific course.

READING.—*The College*, for Preliminary Scientific course.

ST. ANDREWS.—*The University Faculty of Medicine*.—The whole curriculum may be taken in University College, Dundee, or the first two years in the United College, St. Andrews, and the remaining three years at the University College, Dundee. The fees for the complete course, exclusive of examination-fees, amount to about 120*l.* The clinical practice is obtained at the Dundee Infirmary [400 beds]. Dean, Professor Kynoch. Secretary and Registrar, Mr. Andrew Bennett.

SHEFFIELD.—*University Faculty of Medicine*.—Composition-fee, 80*l.*; hospital practice (Royal Infirmary and Royal Hospital, 427 beds), 42*l.* Registrar, W. M. Gibbons. Dean, Professor J. M. Beattie, M.D.

SOUTHAMPTON.—*Hartley College*, for Preliminary Scientific course.

SWANSEA.—*Technical College* (Day Classes), for Preliminary Scientific course.

Besides the Medical examinations already mentioned there are competitions for admission to the Royal Army Medical Corps (for information apply to the Director-General of the Army, Medical Department, War Office, Whitehall, S.W.), the Indian Medical Service (particulars from the Military Secretary, India Office, S.W.), and the Medical Department of the Royal Navy (details from the Director-General of the Medical Department, Admiralty, 18 Victoria Street, Westminster, S.W.). In all these cases candidates must be qualified medical men to begin with, the extra instruction required being in such subjects as tropical diseases, military surgery and administration, and naval hygiene.

There are, in addition, many post-graduate courses of study that may be taken before the graduate goes out into the world to get that experience in medical practice without which his qualification is of little account in the eyes of the public. Homœopathy is essentially post-graduate and is studied in special hospitals.

Dentistry.

THE regulation of the curriculum for registrable qualifications in dentistry is entrusted to the General Medical Council, which requires that students shall pass a Preliminary examination in general education, the same as that required of students of medicine (*see* page 278), and having done this the student is required to register as such when he begins his dental education. The curriculum lasts for not less than four years, subsequent to the date of registration as a dental student, and the diploma in dental surgery cannot be obtained until the student attains twenty-one years of age. The diploma for a licentiate in dental surgery, L.D.S., was formerly granted by certain of the Royal Colleges *sine curriculo* to persons who were in practice before the Dentists Act of 1878, and who were registered in consequence; but it is no longer possible to obtain the diploma without conforming to the full conditions of the curriculum. The diploma granted by the

Royal College of Surgeons of England is most highly esteemed. The College lays down the following requirements: First, as regards training and study, that the candidate shall have been two years at least engaged in acquiring practical familiarity with the details of mechanical dentistry under a competent practitioner; and, second, that he has attended at a recognised dental hospital and school lectures and practical instruction in dental metallurgy, mechanics, anatomy and physiology, histology, surgery (including the

surgery of the mouth), bacteriology, materia medica, the administration of anæsthetics, and also attended at a recognised dental hospital for two years and lectures on and practical instruction in anatomy, physiology, etc., for not less than twelve months at a medical school. It will be seen from these statements that the curriculum is partly medical, although in the greater part dental, the latter also including attendance for two years at a recognised hospital for the practice of dental surgery. At least four years of the time after registration as a dental student must be passed in school, hospital, or private practice, in the acquirement of the specified professional knowledge. In practice it is found that most young men devote five years to the curriculum, three as articulated apprentices to practising dental surgeons, for which the fee is anything up to 300*l.*, and another two years at least to the collegiate curriculum. The last year of the curriculum is frequently spent at the dental hospital or attending lectures. The Royal College provides that the courses of instruction in chemistry, physics, practical chemistry, and mechanical dentistry may be taken prior to the date of registration as a dental student, but such period does not count under any circumstances as part of the four years' study subsequent to registration. The College also recognises many elementary public and science schools as institutions for instruction in chemistry. For example, in London the chemistry

course at the City of London School, St. Paul's School, the Pharmaceutical Society, the Birkbeck Institute, certain of the Polytechnics, Highgate School, University College School, St. Olave's Grammar School, and many others are recognised; but the certificates must state that the candidate has attended not less than 180 hours' instruction and laboratory work in chemistry and 120 hours' instruction and laboratory work in physics. These courses need not be completed within one year, nor need they run concurrently, and they may be commenced or attended before the candidate passes the required Preliminary examination in general education. The complete particulars will be found in the regulations, a copy of which can be obtained from the Secretary, Examination Hall, Victoria Embankment, London, W.C. The Professional examinations comprise the preliminary science in chemistry and physics (which is the same as the first examination in medicine). This is followed by the First Professional examination (Dental) in mechanical dentistry and dental metallurgy, after which the Second Professional may be taken in two parts, the first comprising general anatomy and physiology, general pathology and surgery, and the second dental anatomy and physiology, dental pathology and surgery, and practical dental surgery. This second examination is divisible into certain parts. The fees payable amount to 21*l.*, half of which is for the examinations and the other half for the diploma.

The requirements for Scots and Irish diplomas are in the main similar to the foregoing.

The Royal College of Surgeons, Edinburgh, requires two examinations to be taken during the dental curriculum. The first in anatomy, physiology, chemistry, and physics, and the second in surgery, medicine, and dental therapeutics, with the special subjects of dental anatomy and physiology, dental surgery and pathology, dental mechanics, and dental metallurgy, and a practical, written, and oral examination in dental and oral surgery, pathology, and mechanics. Examination-fees, 15*l.* 15*s.* For full particulars, Mr. D. L. Eadie, 54 George Square, Edinburgh.

Faculty of Physicians and Surgeons, Glasgow.—The examinations and fees are much the same as in Edinburgh. Dr. A. Duncan, B.A., 242 St. Vincent Street, Glasgow, will supply further details.

The Royal College of Surgeons in Ireland also requires two Professional examinations—the First dental and the Final dental examinations—the subjects and conditions being as prescribed by the General Medical Council. Fees, 21*l.* Curriculum fees total to about 80*l.* Candidates who have taken chemistry and physics in the First Professional are exempted from producing evidence of study or examination in them. The Council has power to admit to examination *sine curriculo* candidates whose names are on the Dental Register. All communications should be addressed to the Registrar, Royal College of Surgeons, Stephen's Green, Dublin.

UNIVERSITY DEGREES AND DIPLOMAS.

The degrees and diplomas obtainable at the various Universities are indicated below:

Birmingham.—The curriculum for B.D.S. degree covers five years, and costs 146*l.* 19*s.* Hon. Secretary, Mr. J. Humphreys, Dental Department, University, Birmingham.

Durham.—Diploma, examination-fees 12*l.*, diploma-fee 3*l.* Address, The Secretary, Professor Howden, University of Durham College of Medicine, Newcastle-on-Tyne.

Leeds.—Diploma and degrees (B.Ch.D. and M.Ch.D.) are granted. The approximate cost of the degree is put down at 298*l.* 15*s.* 6*d.*, and for the diploma 272*l.* 15*s.* Address, The Dean of the Faculty of Medicine.

Liverpool.—Dental degrees (B.D.S. and M.D.S.) and L.D.S. diploma. Fees for L.D.S. Liverpool, 58*l.* 10*s.*; other licensing bodies, 61*l.* 10*s.* Mechanical dentistry and hospital practice costs 100*l.* Lecture-fees for B.D.S. degree 67*l.* 10*s.*, and clinical practice 126*l.* Secretary of the Board of Dental Studies, Mr. W. H. Gilmour, M.D.S.

Manchester.—B.D.S. and M.D.S. degrees and diploma. The curriculum covers five years. Composition-fees: B.D.S., 63*l.*; for the L.D.S., University 57*l.* 15*s.* and England 63*l.* Dental Hospital fees payable, 130*l.* (for B.D.S.) or 100*l.* (for L.D.S.). Write, Dean, Medical Faculty, Dental Department, for further particulars.

Dublin.—The M.Dent.Sc. degree is granted by Trinity College.

As a guide to students, we may state that the Dentists' Register for 1910 contains the names of 1,854 L.D.S.s of England, 460 L.D.S.s Edinburgh, 426 L.D.S.s Ireland, 290 L.D.S.s Glasgow, 8 L.D.S.s Victoria University, Manchester, 4 L.D.S.s Dublin, 2 L.D.S.s Leeds, and one each L.D.S. Liverpool and B.D.S. Birmingham; a total of 3,047.

DENTAL INSTITUTIONS.

The brief notes below refer to the dental colleges and hospitals where the whole or part of the professional instruction, as approved by the various licensing bodies, can be obtained. For fuller particulars write to the Dean or Secretary of the institution.

BIRMINGHAM.—University Dental Department and Dental Hospital.

BRISTOL.—University Faculty of Medicine, Dental Department, Royal Infirmary, and General Hospital.

DUBLIN.—School of Dentistry in connection with the Incorporated Dental Hospital of Ireland, Lincoln Place. Fee, 15*l.* 15*s.* per annum. Dean, Mr. George Sheppard, L.D.S.

EDINBURGH.—Dental Hospital and School, 31 Chambers Street. Fee, 31*l.* 10*s.* for two years. Dean, Mr. William Guy, 11 Wemyss Place.

GLASGOW.—Dental Hospital and School, 15 Dalhousie Street. Dean, W. D. Anderson. Fees for dental lectures and two years' hospital practice, 35*l.* 14*s.* Secretary, Mr. D. M. Alexander, 97 West Regent Street.

LEEDS.—University School of Dentistry.

LIVERPOOL.—University Dental Department and Dental Hospital.

LONDON.—*Charing Cross Hospital Dental Department*, Chandos Street, W.C.—Composition-fee (two years), 57*l.* 15*s.* Dean, Mr. F. C. Wallis, F.R.C.S.

Guy's Hospital Dental School, London Bridge, S.E.—The fees for dental lectures and demonstrations and dental practice only, for L.D.S. Eng., are 50*l.* Inclusive fee for students for L.R.C.P., M.R.C.S., and L.D.S. Eng. courses of instruction is 199*l.* 10*s.* Instruction in dental mechanics costs 52*l.* 10*s.* per annum. The whole curriculum for the L.D.S. can be completed here. Dean, Dr. H. L. Eason.

Institute of Dental Technology and School of Mechanical Dentistry, 4 Langham Chambers, All Souls' Place, W.—Principal, Mr. Geo. Cunningham, M.A.

King's College, Strand, W.C.—Composition-fee for L.D.S. course, 36*l.* 15*s.* Dean, Mr. Peyton T. B. Beale.

London Hospital, Mile End, E.—Composition-fee, 42*l.* Mr. Munro Scott, Warden.

Middlesex Hospital, Berners Street, W.—Composition-fee, 56*l.* 14*s.* Dean, H. Campbell Thomson.

National Dental Hospital and College, Great Portland Street, W.—Fees for complete curriculum, comprising two years' mechanics and two years' hospital practice and lectures, 120*l.*; for special lectures and hospital practice, 40*l.*, and for mechanical training, 50*l.* per annum. Dean, Mr. Sidney Spokes.

Royal Dental Hospital of London and London School of Dental Surgery, Leicester Square, W.C.—Fees for instruction in mechanical dentistry and the two years' hospital practice and lectures for L.D.S., 150*l.*; or hospital practice and lectures only, 53*l.* 5*s.* The approximate cost of education for the diploma is given in the prospectus at 280*l.* 14*s.*, including fees, books, and instruments. Dean, Mr. W. H. Dolamore, M.R.C.S., L.R.C.P., L.D.S.

St. Bartholomew's Hospital, Smithfield, E.C.—For particulars of the dental department, apply to the Dean of the School, Mr. T. W. Shore.

St. George's Hospital, Grosvenor Place, S.W.—Annual composition-fee, 15*l.* 15*s.* Dean, Dr. E. I. Spriggs.

St. Mary's Hospital, Paddington, W.—Dental course, 52*l.* 10*s.* Dean, Sir John Broadbent, Bart.

St. Thomas's Hospital, Albert Embankment, S.E.—Dean, Mr. Cuthbert Wallace, M.B.

University College Hospital, Gower Street, W.C.—Dean, Dr. H. B. Shaw.

Westminster Hospital, Broad Sanctuary, S.W.—Dean, Mr. E. Rock Carling, F.R.C.S.

MANCHESTER.—University Dental Department and Victoria Dental Hospital.

NEWCASTLE-ON-TYNE.—Durham College of Medicine, Royal Infirmary and Dental Hospital.

SHEFFIELD.—University Dental Department for R.C.S. diploma.

Veterinary Surgery.

THE regulation of the practice of veterinary surgery is entrusted by the Veterinary Surgeons Act, 1881, to the Royal College of Veterinary Surgeons, Red Lion Square, London, W.C., a corporate body to which a charter was granted in 1844. It is the only institution in this country with the power to grant licences to practise veterinary surgery. The College is an examining body: it does not carry on educational work. The latter is provided by affiliated colleges in London, Edinburgh, Dublin, Glasgow, and Liverpool, and the examinations are held in London and the provinces. The Royal College requires candidates for the diploma M.R.C.V.S. to pass an examination in general knowledge recognised by the General Medical Council, and the list of approved examinations which the Royal College conducts is the same as that of the General Medical Council. In England the Medical Preliminary examination of the College of Preceptors, and in Scotland the Educational Institute examination are those which veterinary students usually enter for. It should be noted that the last-named examination does not satisfy the conditions under which students can claim payment of fees from the Carnegie Trust. After passing the examination the student has to enter upon a four-year course of study at a veterinary college and pass an examination at the end of each college year. The Final not until he reaches the age of twenty-one. The subjects of the curriculum are indicated by the following outlines of the examination subjects:

First or "A" examination subjects are—

1. Anatomy of the domesticated animals: bones, ligaments, joints.
2. Chemistry and elementary physics.
3. Biology: Elementary zoology and botany.

Second or "B" examination subjects are—

1. Anatomy of the domesticated animals.
2. Histology and physiology.
3. Stable management, the manipulation of the domesticated animals, and the principles of shoeing.

Third or "C" examination subjects are—

1. Morbid anatomy, pathology, and bacteriology.
2. Materia medica, pharmacy, therapeutics, and toxicology.
3. Veterinary hygiene and dietetics.

Fourth or "D" examination subjects are—

1. Principles and practice of veterinary medicine and clinical medicine.
2. Principles and practice of veterinary surgery, clinical surgery, obstetrics, and shoeing.
3. Meat inspection.

The fee for each examination is 5*l.*, with a registration fee of 1*l.* on passing the Final examination. The re-examination fee is 3*l.* 3*s.* We indicate below where courses of instruction can be obtained: these necessarily follow the curriculum laid down by the Royal College of Veterinary Surgeons.

The examination for the Fellowship of the Royal College of Veterinary Surgeons can only be taken by members who have held the diploma for five years. A thesis has to be presented and defended before the Board of

Examiners, and, in addition, there is a written and practical examination in veterinary medicine and surgery, pathology and bacteriology, hygiene and sanitary science.

VETERINARY DEGREES.

The London University grants the degree B.Sc. in veterinary science. Candidates must pass the Matriculation examination of the University, which, of course, entitles them to commence their professional studies for the M.R.C.V.S.; and subsequently they are required to study for four years, passing a Preliminary examination in inorganic chemistry and physics, an Intermediate in organic chemistry, biology, veterinary anatomy, and veterinary physiology, and at the end of the four years a Final examination in veterinary pathology and veterinary hygiene. Similar degrees are granted by the Universities of Edinburgh and Glasgow, the University of Manchester grants a diploma in veterinary State medicine, and the Liverpool University grants a diploma in veterinary hygiene. These degrees and diplomas are only granted to those who hold the registrable qualification to practise veterinary medicine.

AFFILIATED COLLEGES.

The following are the institutions where can be obtained veterinary instruction suitable for candidates for the M.R.C.V.S. diploma:

LONDON.—*Royal Veterinary College* (founded 1791; incorporated 1875), Great College Street, Camden Town, N.W.—Educational fee, 84*l.*, paid in four instalments, and 2*l.* 12*s.* 6*d.* library fees. There are also fees for occasional students as follows: Anatomy, 8*l.* 8*s.*; botany, 3*l.* 3*s.*; chemistry, 5*l.* 5*s.*; pathology, 5*l.* 5*s.*; physiology, 5*l.* 5*s.*; practical chemistry, 3*l.* 3*s.*; practical histology, 3*l.* 3*s.*; practical pathology, 5*l.* 5*s.*; surgery, 5*l.* 5*s.*; and veterinary medicine, 5*l.* 5*s.* Post-graduate courses are also held. Principal and Dean, Professor Sir John McFadyean, M.R.C.V.S. Secretary, Mr. R. A. N. Powys.

DUBLIN.—*Royal Veterinary College of Ireland*, Pembroke and Shelbourne Roads, Balls Bridge.—Fees, 21*l.* per session, with 1*l.* 5*s.* entrance-fee. Principal, Professor A. E. Mettam, B.Sc., M.R.C.V.S.

EDINBURGH.—*Royal (Dick) Veterinary College*, Clydeside Street (founded 1823).—Entrance and class fees, 58*l.* 16*s.*, in four payments, with an extra fee of 5*l.* 5*s.* for students returning for a portion of the fourth year's class. The Carnegie Trust pays students' fees at this College if the conditions laid down by the trustees are fulfilled. Principal, Professor J. R. U. Dewar, F.R.C.V.S. Secretary, Mr. Robert Anderson, S.S.C., 37 York Place, Edinburgh.

GLASGOW.—*Glasgow Veterinary College* (established and incorporated 1862), Buccleuch Street, Garnethill.—The College is under the management of Governors acting under a scheme approved by the Scotch Education Department. Fee, 70*l.* 7*s.* for four years. There are a number of bursaries for which students are eligible. The Carnegie Trust pays the fees of students who fulfil the conditions. Principal, Professor J. McCall, F.R.C.V.S. Secretary, Mr. Wales.

LIVERPOOL.—*University Veterinary School* (formerly the New Veterinary College founded in Edinburgh by the late Professor Williams).—Fees for four years' lectures and all other instruction, 75*l.* 12*s.*, payable in four instalments of 18*l.* 18*s.* Principal, Professor W. Owen Williams.

Science.

The Profession of Analyst.

THE last decade has witnessed an increasing number of pharmacists entering the profession of analytical chemists, and for food and drug analysis there is no better grounding than pharmacy. Branch E of the Institute of Chemistry's examinations, which allows the holder to practise as a public analyst under the Sale of Foods and Drugs Act, is the usual one taken by the pharmacist, who often proceeds to a Degree in Science as well. Students must bear in mind that there is a great difference in the two examinations, the first being eminently practical, and the second academical. In both cases a college curriculum, usually three years, must be taken, unless the external degrees of the University of London or National University of Ireland be taken, which are obtainable without

recourse to a curriculum, and also enable the candidate to enter for the Institute of Chemistry's Intermediate examination. The title "analyst" is not protected, but the successful consulting chemist must, in addition to a sound business acumen and commercial knowledge, possess a good scientific training. Analysts under the Fertilisers and Feeding-stuffs Act must also be Fellows of the Institute of Chemistry. Brief details concerning this Institute's examinations and relating to science degrees are given below.

Chemistry.

THE INSTITUTE OF CHEMISTRY OF GREAT BRITAIN, 30 Bloomsbury Square, London, W.C., was founded to elevate professional chemistry by promoting the better education of persons desirous of becoming analysts or chemical advisers,

by setting up a high standard, and by insisting upon the observance of strict rules of professional conduct. The Fellowship of this Institute (F.I.C.) is a definite qualification for practice. The conditions to comply with the regulations of the Institute of Chemistry for its Fellowship are here given :

To register as a student, the candidate must be seventeen years of age, and must have passed an approved Preliminary examination. A list of approved certificates is given in the Institute's book of regulations, which includes all other information regarding the examinations, and can be obtained *gratis* from the Registrar at the above address. The student's annual registration-fee is 5s. Two courses of further procedure are available. The student must study for three years at an approved college, or become a pupil for two years with a F.I.C., and go to college for two other years, or have taken the B.Sc. degree in chemistry and physics.

Before the student is allowed to enter for the *Intermediate examination*, he must satisfy the Council that he has undergone a course of instruction, in accordance with the regulations, in theoretical and practical chemistry, physics, mathematics, and a fourth subject selected from the following : Higher physics, advanced mathematics, mechanics or chemical engineering, metallurgy, geology and mineralogy, physiology, bacteriology, agriculture, elementary botany, or elementary biology. The fee for the Intermediate examination is 5l. 5s. Candidates who have taken first or second class Honours in chemistry or have obtained special distinction in chemistry for the Final examination of an approved university, can, generally speaking, be admitted directly to the Final examination of the Institute.

All candidates must pass the *Final examination* (fee 5l. 5s., or for candidates exempted from the Intermediate examination 10l. 10s.). In addition to a general knowledge of all branches of chemistry, special knowledge is required in the one branch for which the candidate enters—viz., mineral chemistry, metallurgical chemistry, physical chemistry, organic chemistry, analysis of food, drugs, fertilisers and feeding-stuffs, soils, and water (including a compulsory examination in therapeutics, pharmacology, and microscopy), or biological chemistry. Candidates for the examination in chemistry of food and drugs, etc., which is recognised by the Local Government Board for appointments as public analysts, are now required to produce evidence of training in elementary botany. Candidates in the branch of biological chemistry must show that they have taken a course of elementary biology. All candidates for the Final examination are required to translate French and German technical literature into English, with the aid of dictionaries, to the satisfaction of the examiners.

The candidate on passing this examination is granted the Associateship of the Institute of Chemistry, the Fellowship being conferred three years later if evidence be produced that the Associate has during that time been continuously engaged in analytical chemistry. Associates or Fellows are allowed to enter for further examinations in any of the following branches only : (1) Food and drugs, to qualify for public analyst, fee 5l. 5s.; (2) biological chemistry, fee 5l. 5s.; (3) special examination in technological chemistry, for which practical technological training is required in the branch selected—*e.g.*, gas-manufacture, steel-manufacture, or the fat and oils industry—fee 3l. 3s. Special certificates are given to candidates who pass these examinations.

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY.—This institution or group of associated colleges at South Kensington was incorporated in 1907 for the purpose of giving the highest specialised instruction, in conjunction with the fullest equipment, for the most advanced training and research in various branches of science, especially in its application to industry. It carries on the work of the Royal College of Science, the Royal School of Mines, and the City and Guilds College (formerly known as the Central Technical College) is an integral part. Candidates for admission to the college's first-year course must be over seventeen years old, and show that they have received a good secondary education, containing as essential elements English, elementary experimental science, mathematics, elementary mechanics, freehand drawing, with—in the case of engineering students—mechanical drawing. Diplomas are awarded at the several constituent colleges in one or more departments. The diploma of A.R.C.S. is issued after three years' satisfactory study in mechanics, physics, chemistry, botany, zoology, and geology, but the conditions are subject to revision in

regard to the session 1911-12 and after. The A.R.S.M. is granted after a satisfactory four-years' course of study in mining and metallurgy. The diploma of the Imperial College of Science and Technology will be awarded on the satisfactory completion of two years' study in advanced science or technology at the Imperial College, or approved institutions of equal rank. This means an addition of another year to the A.R.C.S. course. Fees : first year, 39l.; second year, A.R.C.S., 29l., A.R.S.M., 40l.; third-year courses, 10l. to 32l. The Calendar of the Imperial College can be obtained from Messrs. Eyre & Spottiswoode, Ltd., London, E.C., price 6d.

CITY AND GUILDS OF LONDON INSTITUTE.—The operations of the Institute are divided broadly into four branches : (1) The City and Guilds Central Technical College; (2) the City and Guilds Technical College, Finsbury; (3) the City and Guilds South London Technical Art School; and (4) the Department of Technology of the Institute.

The City and Guilds CENTRAL TECHNICAL COLLEGE, Exhibition Road, S.W., forms the Engineering Section of the IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY, and awards the diploma of A.C.G.I. The age admission is sixteen, and students must take the Matriculation examination of the Institute, the subjects for which are mathematics and mechanics, English, French or German, and two of the following : mechanical drawing, physics, and chemistry. Owing to increasing competition it is becoming necessary for candidates to take *all* the above subjects. The diploma course in chemistry, civil and mechanical engineering, and electrical engineering covers three years.

The City and Guilds TECHNICAL COLLEGE, FINSBURY, provides day courses of instruction and evening classes in electrical engineering, mechanical engineering, and chemistry. The day courses covering a period of two to three years. Students must be fifteen years old, and have passed the Entrance examination which is held yearly in September. Certificates are awarded to students of sufficient merit. Full particulars will be found in the programme of the Colleges, to be had on application.

Degrees in Science.

A curriculum extending over three academical years is the minimum required by practically all the Universities in the United Kingdom; the University of London and the National University of Ireland providing exceptions.

The University of London allows the candidate to enter for the Intermediate examination only after the lapse of a year following matriculation. Four subjects selected from the following seven must be taken in the Intermediate examination (fee 5l.) : Pure mathematics, applied mathematics (mechanics), experimental physics, chemistry, botany, zoology, and geology. Honours may be taken in any subject, but the compulsory number is not decreased thereby. The Final examination may be taken one year after passing the Intermediate, but three years must elapse between the Final and the Entrance examination. The subjects for the Final Pass examination must be three of the ten prescribed subjects. The candidate for an Honours degree takes one of the subjects, with an appropriate subsidiary subject. Longer notice of entry is required from Honours candidates, many of whom have first taken the Pass examination. The fee is 5l. Internal students of the University undergo, after registration or Matriculation, a course of instruction either at a school of the University or under recognised teachers of the University. Degrees are granted in several branches of science besides natural and physical science. Details concerning all these matters will be found in the regulations for degrees of science, obtainable on application to the Principal, University of London, South Kensington, London, S.W. To obtain the D.Sc. degree a graduate in science may submit a thesis, based upon his own research, not less than two years after graduation (fee, 20l.).

At the *English Provincial Universities* the subjects are similar to those at the London University, the student attending an approved course of study subsequent to matriculating. The Intermediate and Final examinations are then taken in the subjects of the curriculum. For full particulars consult the Calendars of the Universities at Birmingham, Leeds, Liverpool, Manchester, and Sheffield.

For the *Scots Science Degrees* the student enters the University after taking the Preliminary, and attends seven of the courses of instruction in the curriculum for three academical years. Only four of the seven subjects need be taken at the particular University whose degree is desired, three taken elsewhere being accepted.

At the *National University of Ireland* the candidate may present himself for the B.Sc. degree examination a year after graduating in any Faculty in the University. Fee, 1*l.*, with a further 3*l.* on admittance to degree.

Other Branches of Science.

Courses are available in many *Technical Colleges* throughout the country in technological subjects such as agricultural chemistry, dyeing, brewing; and regarding these advice must be sought from the Secretaries of the local institutions. Optics is dealt with in a separate section.

The following list enumerates the chief institutions where instruction in scientific subjects can be obtained :

LONDON.

† **BATTERSEA POLYTECHNIC**, Battersea Park Road, S.W.—Approved courses (day and evening) for the London University are provided in chemistry, botany, physics, and engineering. There is also a diploma course (three years) in chemistry, fee 13*l.* 13*s.* per year. Full particulars from the Secretary, Mr. J. Harwood.

† **BIRKBECK COLLEGE**, Bream's Buildings, Chancery Lane, E.C.—Complete courses (day and evening classes) for science degrees. Fees: Day, 17*l.* 10*s.* per session; evening, 8*l.* per session. Secretary, Mr. H. Wells Eames.

CITY AND GUILDS CENTRAL TECHNICAL COLLEGE, Exhibition Road, S.W.—Diploma courses in civil and mechanical engineering, electrical engineering, and chemistry. Fees, 36*l.* per session. Registrar, Mr. J. Jones.

† **CITY OF LONDON COLLEGE**, White Street, Moorfields, E.C.—Chemistry, botany, and physics are taught in evening courses. Fees, 10*s.* to 30*s.* for non-members; also Minor chemistry course, fee 30*s.* to non-members. Secretary, Mr. David Savage.

* **EAST LONDON COLLEGE**, Mile End Road, E.—Intermediate and Final B.Sc. courses, evening 5*l.* 5*s.*, day 10*l.* 10*s.* Registrar, Mr. T. C. Hodson.

† **GOLDSMITHS' COLLEGE**, New Cross, S.E.—Degree classes (evening) in chemistry, botany, and physics. Fee, 5*s.* to 30*s.* Warden, Mr. W. Loring, M.A.

* **IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY**.—See constituent colleges—Royal College of Science and City and Guilds Central Technical College.

* **KING'S COLLEGE**, Strand, W.C.—Composition fee in the Faculty of Science, 31*l.* 10*s.* per annum. Secretary, Mr. Walter Smith.

† **NORTHERN POLYTECHNIC INSTITUTE**, Holloway, N.—Degree courses (day) in science, fees 6*l.* 6*s.* to 15*l.* 15*s.*; evening classes, single subjects, fees 5*s.* to 50*s.* Secretary, Mr. W. M. Macbeth.

* **ROYAL COLLEGE OF SCIENCE**, Exhibition Road, S.W.—Degree and diploma courses in science and engineering. Sessional fees, 16*l.* to 41*l.* Secretary, Mr. A. Gow, M.A.

* **ROYAL HOLLOWAY COLLEGE**, Englefield Green, Surrey.—For women students only, mainly residential. Degree courses in science, fee 33*l.* 6*s.* 8*d.*, or, without residence, 12*l.*

† **SIR JOHN CASS TECHNICAL INSTITUTE**, Jewry Street, Aldgate, E.C.—Evening courses in chemistry, physics (fee 4*s.* to 10*s.*), and also special courses on the fermentation industries. B.Sc. course provided. Principal, Dr. Chas. A. Keane, F.I.C. Secretary, Mr. W. H. Davison, M.A.

† **SOUTH-WESTERN POLYTECHNIC**, Mantresa Road, Chelsea, S.W.—Evening courses in chemistry and botany adapted for the Minor cost 25*s.* per session. B.Sc. course, day, 15*l.* per session; evening, 2*l.* per session. Secretary, Mr. H. B. Harper.

† **TECHNICAL COLLEGE**, Leonard Street, Finsbury, E.C.—Constituent of City and Guilds of London Institute. Courses similar to those at the Central Technical College, but shorter. Fee, 20*l.* per session. Registrar, Mr. K. Dove.

* **UNIVERSITY COLLEGE, LONDON**, Gower Street, W.C.—Fees for three years' complete B.Sc. course, including chemistry, 111*l.* 1*s.* Secretary, Mr. W. W. Seton, M.A.

WANDSWORTH TECHNICAL INSTITUTE, High Street, Wandsworth, S.W.—Evening classes in science subjects suitable for pharmaceutical students. Fee, 7*s.* 6*d.* to 15*s.* per subject.

* Schools of the University of London.

† Institutions having teachers recognised by the University of London.

† **WEST HAM TECHNICAL INSTITUTE**, Romford Road, E.—Evening classes in science 1*l.* 1*s.* per subject per term, and pharmacy 35*s.* per course. Also day classes in chemistry and physics, fee 7*l.* 7*s.* per session. Principal, Mr. A. F. Hogg, M.A.

† **WOOLWICH POLYTECHNIC**, Lower Market Street, Woolwich.—Instruction is given in chemistry and botany. Fees, 5*s.* to 40*s.* per session. Clerk, Mr. A. J. Naylor.

THE PROVINCES.

ABERDEEN.—University.—Degree courses in science.

ABERYSTWYTH.—University College of Wales.—Fee for the science course, 10*l.* per session, exclusive of practical work, which costs 1*l.* 1*s.* to 4*l.* 4*s.* per term.

BANGOR.—University College of North Wales.—Inclusive fees as at Aberystwyth. Registrar, Mr. J. E. Lloyd, M.A.

BARROW-IN-FURNESS.—Technical Schools, Abbey Road.—Evening classes in chemistry (general and technological) and physics classes. Fee, 7*s.* 6*d.* to 15*s.* per session.

BELFAST.—Queen's University of Belfast.—Class fees in the Faculty of Science, 1*l.* 1*s.* to 3*l.* 3*s.*, except practical chemistry, up to 7*l.* 7*s.*

BIRMINGHAM.—University.—B.Sc. degree course in pure science costs about 12*l.* 12*s.* to 28*l.* per year. *Municipal Technical School*, Suffolk Street.—Evening classes in science cost 5*s.* to 15*s.* per session. Principal, Dr. W. E. Sumpner.

BRADFORD.—Municipal Technical College.—Day course for science qualification or technological (dyeing) subjects, fee 13*l.* Evening: B.Sc. course, 21*s.*

BRIGHTON.—Municipal School of Science and Technology.—Day courses for London University examinations. Fee, 5*l.* 5*s.* per term.

BRISTOL.—University.—Degree courses. Evening lectures in chemistry and botany; fees, 10*s.* per session. *Merchant Venturers' Technical College*.—Chemistry and physics classes (evening), 5*s.* to 10*s.* per subject. Day classes are also held.

CARDIFF.—University College of South Wales and Monmouthshire.—Classes are given in science subjects.

CORK.—University College.—A constituent of the National University of Ireland. Class fees usually 1*l.* to 3*l.*, except practical chemistry, 5*l.* Registrar, Mr. J. P. Molohan, M.A.

DERBY.—Technical College.—Instruction in chemistry, botany, and physics. Fees: day, 10*l.* 10*s.* per course, or 10*s.* 6*d.* per subject per term (except pharmaceuticals, 1*l.* 1*s.*); evening, 10*s.* 6*d.* to 1*l.* 1*s.* per year. Registrar, Mr. J. L. Rees.

DUBLIN.—Royal College of Science.—Three years' course for A.R.C.Sc.I. Registrar, Mr. P. A. E. Dowling.

DUNDEE.—University College.—Botany, chemistry, and physics are taught in day classes. Fees, 1*l.* 11*s.* 6*d.* to 4*l.* 4*s.* for each winter or summer session.

EDINBURGH.—Heriot-Watt College, Chambers Street.—Composition-fee for complete day courses in chemistry and physics, 1*l.* 1*s.* to 15*l.* 15*s.* per session. Evening classes in chemistry, botany, and pharmaceuticals, 5*s.* to 21*s.* per session.

EXETER.—Royal Albert Memorial College.—Degree course in science; composition-fee, 12*l.* per year. Evening classes in science, 5*s.* to 10*s.* per subject each session. Pharmaceutical course, 10*l.* per year. Registrar, Mr. A. Woodbridge.

GALWAY.—University College.—A constituent of the National University of Ireland. Courses and fees as at Cork.

GLASGOW.—University.—Degree courses in science, including pharmacy. Class fees in science subjects, 2*l.* 2*s.* to 4*l.* 4*s.* per session, with higher fees (10*l.* 10*s.*) for practical chemistry. *Technical College*.—Day and evening classes in chemistry.

HALIFAX.—Municipal Technical College, Hopwood Lane.—Pure and applied chemistry in evening (fee, 7*s.* 6*d.* per course) and during the day (fees: lectures 1*l.* 1*s.*, practical 2*l.* 2*s.* per session).

HUDDERSFIELD.—Technical College.—Full-day courses (fee, 5*l.* 5*s.* per session) and evening classes (fee, 10*s.* per session) in chemistry, physics, and technological subjects. Evening science courses. Fee, 10*s.* 6*d.* per session. Secretary, Mr. T. Thorp.

HULL.—Municipal Technical School, Park Street.—Evening classes in chemistry. Course fees, 7*s.* 6*d.* to 15*s.* per subject. Principal, Mr. T. Luxton, B.A., B.Sc.

LANCASTER.—The Storey Institute.—Evening classes in chemistry, physics, and biology. Fee, 4*s.* per subject, or 7*s.* 6*d.* per course (including practical work). Principal, Mr. Wm. French, M.A., F.I.C.

LEEDS.—University.—Lecture courses of degree in science subjects, 1*l.* 11*s.* 6*d.* to 3*l.* 13*s.* 6*d.* per course. Laboratory fees, 3*l.* 3*s.* to 21*l.* per session. *Central Technical School*, Cookridge Street.—Evening courses in chemistry, adapted to the University degrees and diplomas in science. Sessional fee, usually 7*s.* 6*d.*

LIVERPOOL.—University.—Course for degrees in science or special purposes. Course fees in science, 3*l.* to 4*l.* Laboratory work, 6*l.* to 21*l.* per course.

MANCHESTER.—University.—Degree courses in science (including pharmacy). Fees, 20*l.* to 30*l.* per session. Registrar,

Mr. Ed. Fiddes, M.A. The *School of Technology* also gives sound education in science (Principal, Professor Pope, F.R.S.).

NEWCASTLE-UPON-TYNE.—*Armstrong College*.—Fees for curriculum of B.Sc. Durham, 60l. Evening classes are held. Secretary, Mr. F. H. Pruen.

NOTTINGHAM.—*University College*.—Day science courses. Evening classes in chemistry, physics, and botany. Fee, 5s. to 10s. per subject. Registrar, Mr. P. H. Stevenson.

PLYMOUTH.—*Municipal Science, Art, and Technical Schools*. Day courses in science subjects cost 1l. to 5l. 5s. per subject, or degree course 12l. 12s. per term. Evening classes, 5s. to 10s. each. Secretary, Mr. E. C. Cook.

READING.—*University College*.—Day and evening classes in science subjects. Materia medica at afternoon class; fee, 1l. per course. Evening class, fees, 5s. to 10s. each.

ST. ANDREWS.—*United College*.—Class fees in University degree course cost 2l. 2s. to 4l. 4s. for each winter and summer session.

SHEFFIELD.—*University*.—Degree courses in science. Sessional lecture fees, 1l. 11s. 6d. to 4l. 4s. per course; laboratory fees, 3l. 3s. to 16l. 16s. per session. Evening classes at low fees. Registrar, Mr. W. M. Gibbons.

SOUTHAMPTON.—*Hartley University College*.—Composition-fee for B.Sc. courses, 24l. per session. Evening classes in science subjects at low fees. Principal, Dr. S. W. Richardson.

SWANSEA.—*Technical College*.—Chemistry, physics, and botany at evening classes. Fees: Lectures, 5s.; practical work, 10s. per subject. Day courses are held. Secretary, Mr. W. James.

Optical Diplomas.

Pharmacists have within the last fifteen years taken up the practice of sight-testing and spectacle-fitting, and it has proved to pay well to those who fit themselves to deal adequately with the subject by obtaining a thorough grounding in the scientific principles of optics and the anatomy of the eye. We publish a book which gives a good insight into the question and will help in deciding upon taking up ophthalmic optics—"The Chemist-Optician," 4s.

We now give details of the two diploma schemes which are working in this country, prefacing them with the remark that the certificates have as yet no legal status. The possession of a diploma is one of the best evidences of skill that a pharmacist can put before a medical practitioner, as it proves that the holder has gone through a thorough course of study in the subject.

THE SPECTACLE MAKERS' COMPANY, 11 Temple House, Temple Avenue, London, E.C., hold examinations twice a year in London or the provinces. The diploma scheme was founded in 1898, and has been several times revised. A revised syllabus was published in THE CHEMIST AND DRUGGIST Summer Number, and is well worth studying by would-be opticians. The main features of the syllabus are as follows: There are two examinations:

(1) The Preliminary examination, consisting of (a) mathematics and arithmetic, and (b) and (c) general and practical optics.

(2) The Final examination, consisting of (d) visual optics and sight-testing, (e) practical frame fitting and measurement, (f and g) lenses, the eye, instruments, and refractive errors, and (h) a practical examination in the application of lenses to correct errors of vision.

Candidates who have passed any recognised examination in the mathematical subjects, specified in section a, are exempt from that examination. Candidates over the age of 30 years, who have been engaged in the optical industry for over seven years, are also exempt from section a. Candidates over the age of 40 years, who have spent ten years in the optical industry, before the year 1903, are further exempt from section c of the Preliminary examination. The Pharmaceutical Society's Major and Minor examinations exempt from section a except trigonometry. The next examination will be held at St. Bride Institute, Ludgate Circus, E.C., on October 31 and following days. Entries must be received on or before September 30.

The books recommended in the syllabus are: Consterdine and Barnes's "Practical Mathematics"; Laurance's "General and Practical Optics"; Glazebrook's "Light"; Thompson's "Optical Tables and Data"; Phillips's "Spectacles and Eyeglasses"; Laurance's "The Eye"; Hartridge's "Refraction"; Taylor's "Key to Sight Testing"; Johnson's "Optical Instruments"; Glaze-

brook's "Heat and Light"; Percival's "Optics"; Ganot's "Physics"; Tscherning's "Physiologic Optics"; Glazebrook's "Practical Physics"; Johnson's "Photographic Optics"; Gage's "The Microscope"; Maddox's "Ophthalmological Prisms"; Taylor's "Frame-fitting"; and the "Optician's Manual." The fees are three guineas for each examination, and in addition the diploma costs four guineas. Those who take up the freedom of the City of London, which they are entitled to when they have become freemen of the Spectacle Makers' Company, can do so on payment of one guinea. There are small annual payments to the Company for "quarterage." The full prospectus, with application form, can be obtained from the Clerk of the Company, Colonel T. Davies Sewell, F.R.A.S., 11 Temple House, Temple Avenue, London, E.C.

THE BRITISH OPTICAL ASSOCIATION (Incorporated 1895).—Secretary, Mr. J. H. Sutcliffe, F.R.S.L., 199 Piccadilly, London, W. The Association's scheme consists of two grades of examination, Membership (dioptric grade) and Fellowship, and these are held twice yearly in London (May and November), or in the provincial centres when a sufficient number of candidates desire it.

Candidates for the dioptric grade are required to produce a Preliminary certificate from an approved examining body. (The list of approved examining bodies is similar to that of the Pharmaceutical Society of Great Britain.) The examination is practical and theoretical, and the theoretical part can be taken separately and in advance of the practical work, although no certificate is given until the practical examination is passed. The subjects in which the candidate is examined are lenses, frames, subjective sight-testing, dissection, physical optics, physiologic optics, anatomy and physiology of the eye, phorometry, and ethics.

For the Fellowship examination candidates must hold the dioptric certificate, and are examined in similar subjects as before, but a deeper knowledge is required, and prismetry, ophthalmoscopy, embryology, and microscopical demonstrations are included.

The examination-fees are: Dioptric Grade, 3l. 3s.; Fellowship, 5l. 5s. Qualified chemists of Great Britain and Ireland are exempt from portions of the Dioptric Grade examination.

The following are the papers set in Section III. at a recent examination of this body and are useful as showing the scope of these contests:

PART A.

(Only four questions to be attempted.)

1. Explain by the aid of carefully drawn diagrams the formation of real and partial shadows. How are these affected by alterations in the size of the luminous body? And why is a very small but intensely luminous body unsuitable for some kinds of illumination? (25 marks.)
2. By looking obliquely at the reflection of a candle flame in a thick plane mirror, I see several images of the flame. How are these formed? And why does the first one of the series change in brightness when the angle of obliquity is altered? (25.)
3. Explain how to deduce the ordinary formulæ for finding the relative sizes and positions of the image and the object in an ordinary double convex lens of equal curvature. (25.)
4. Explain the principles involved in the correction of a lens for chromatic aberration. (25.)
5. State how to obtain beams of plane polarised light by (a) a reflection, (b) refraction, and (c) transmission through a portion of some crystalline substance. (25.)

PART B.

(Two questions only.)

6. Transpose the following spherical cylinder formulæ into toric formulæ:

$$(a) \begin{cases} - .75 \text{ sph.} \\ - 2 \text{ cyl. } 45^\circ \end{cases} \quad (b) \begin{cases} + 6 \text{ D sph.} \\ - 1.50 \text{ cyl. } 85^\circ \end{cases} \quad (c) \begin{cases} + 4.25 \text{ sph.} \\ - 7.53 \text{ cyl } 17^\circ \end{cases} \quad (15.)$$

7. Neatly sketch a spectacle frame for constant use by a person of abnormal facial measurements—say, nose flat and depressed; eyes at unequal distances from centre of nose: one ear higher than the other. (15.)

8. When can bi-focal lenses be prescribed without any special cautions in use? When are special instructions necessary to ensure satisfaction? (15.)

PART C.

(Only four questions must be attempted, of which No. 10 must be one.)

9. Explain the meaning of the following: (a) optic disc, (b) fundus, (c) fovea, (d) visual axis, and (e) optic axis of the eye. (30.)
10. Explain how on your own system of testing you would expect to obtain such a correction as + 3 Sph. \cap 2.5 Cyl. axis horizontal. (50.)
11. Explain the construction of Snellen type, and the specification of visual acuity by their aid. (45.)
12. Explain fully the use of the pinhole in a subjective examination. (35.)
13. What do you understand by accommodation? How is it supposed to be produced? (45.)

PART D.

14. What is the pupil of the eye? By what means and when does it become smaller and when does it become larger? What are the uses of the pupil becoming smaller and larger? (45.)
15. What is the structure and use of the lachrymal gland? Where is it situated? Where do tears go to under normal circumstances and why do they in crying flow down the cheeks? (45.)

PART E.

16. Discuss fully the uses of prisms both in connection with errors of refraction and without. In what cases can prisms be successfully prescribed? (30.)
17. When should stereoscopic exercises be used? How can such exercises be used with the very young? If the images cannot be fused through a stereoscope, what course would you adopt to help fusion? (30.)

Optical Instruction.

THE BRITISH OPTICAL INSTITUTE, Mount Edgcombe Gardens, Clapham Road, London, S.W., conducted by Mr. F. Gordon Huntley, prepares students for the examinations of the British Optical Association and the Spectacle Makers' Company. A refraction clinic for the poor is carried on at which students obtain practice in sight-testing. The theoretical portion of the dioptric course costs in fees 3*l.* 3*s.*, and the fee for practical work, sight-testing, frame fitting, frame making, and repairing, lens grinding and polishing, etc., is 5*l.* 5*s.*, or the two courses combined 7*l.* 7*s.* The Fellowship course is in two parts: (1) theoretical, costs 5*l.* 5*s.*, and (2) practical, 7*l.* 7*s.*, or together 10*l.* 10*s.* The classes are held during the day and in the evening.

MR. A. E. GREY, 13 and 14 Spencer Street, Clerkenwell, London, E.C., receives pupils for personal instruction in the practical work and sight-testing part of the Spectacle Makers' Company's syllabus.

MR. J. C. KIDD, 551 Cheetham Hill, Manchester, specialises in optical instruction for the examinations of either of the examining bodies.

MR. LIONEL LAURANCE, Orthos House, 21 John Street, Bedford Row, London, W.C., conducts, in association

with Mr. H. Oscar Wood, courses of instruction in preparation for the examinations of the Spectacle Makers' Company. The tuition is both in class and by correspondence. The fees for the Preliminary examination (excepting the mathematical portion) are 5*l.* 5*s.*, for mathematics and arithmetic 1*l.* 1*s.*, for the Final examination (sight-testing or advanced optics) 5*l.* 5*s.* Mr. Laurance is Official Instructor to the Spectacle Makers' Company, and is the author of a special textbook on "Optics." A special reduction in fees is made to members of the Society of Chemist-Opticians.

LONDON SCHOOL OF OPTICS, 47 Hatton Garden, London, E.C.—This school, carried on in connection with the Anglo-American Optical Co., provides instruction in general refraction and sight-testing, both in class and by correspondence. Mr. G. E. Druiff, one of the principals, publishes a book on "Refraction" (10*s.* 6*d.*), which is used by the students as a text-book.

THE NORTHAMPTON INSTITUTE, Clerkenwell, London, E.C.—The courses in optics are held in the British Horological Institute in Northampton Square. The full course of technical optics occupies two years, and consists of lectures, laboratory work, drawing-office work, tutorial classes, and workshop practice. A diploma in technical optics is awarded on the completion of a two-years' course with satisfactory records in examination and class-work. Evening students also receive certificates of attendance and satisfactory progress. The winter term begins early in October. The fees are 15*l.* per session (October to July). Partial courses (two afternoons a week) may also be taken, for which the fee is 3*l.* per session, and there are afternoon classes suitable for chemists in business who cannot leave during the day. The whole field of optics is covered both theoretically and practically. The prospectus of the optical department can be had by applying to Dr. R. Mullineux Walmsley, the Principal.

LEEDS COLLEGE OF PHARMACY, Clarendon Road, Leeds.—Mr. F. Pilkington Sargeant conducts optical correspondence classes. The fee for the three-months' course, which includes one interview for demonstration in sight-testing, is three guineas.

GLASGOW COLLEGE OF OPTICS, Blythwood Chambers, 180 West Regent Street, is conducted by Mr. T. S. Baird and Mr. Lothian. Students are prepared for the examinations of the British Optical Association and the Spectacle Makers' Company. Course I., embracing a series of forty lectures, covers the syllabus of work for the ordinary qualifying examinations of either the B.O.A. or S.M.C. Course II. is necessary for the higher examinations in optics. It embraces lectures and clinical examination of diseases of the eye and the objective methods of examination. The subjects of Course I. are also treated in an advanced manner.

MR. J. G. WALLBRIDGE, School of Optics, 227 Kensington, Liverpool, has recently started optical classes.

Preliminary Examinations.

THE examination for Matriculation at the University of London is placed first, because a fair number of chemists' apprentices and assistants, after qualifying in pharmacy, go on for science and medicine or other professional occupation, and if they in their youth have not passed a first-class Preliminary examination they find the want a handicap.

The London University Matriculation Examination is recognised by other Universities, with few exceptions, and also by German Universities. The subjects are: (1) English; (2) elementary mathematics; (3) Latin, or elementary mechanics, or elementary physics (heat, light, and sound), or elementary chemistry, or elementary botany; (4 and 5) two of the following subjects, if not taken under Section (3): Latin, Greek, French, German, ancient history, modern history, physical and general geography, history and geography, logic, geometrical and mechanical drawing, mathematics (more advanced), elementary mechanics, elementary chemistry, elementary physics (heat, light, and sound), elementary physics (electricity and magnetism), elementary biology (botany), elementary biology (zoology), elementary geology. It should be noted that chemists' apprentices who want their certificate of examination to enable them to register as students of

pharmacy must take Latin. The same also applies to those who desire to be registered as medical or dental students. The University holds the examination at various centres thrice annually—in January, June, and September. The fee for it is 2*l.*, and in entering for it the candidates must obtain from the Principal of the University of London, South Kensington, London, S.W., forms of entry about six weeks beforehand, but full particulars as to this and details of the subjects of the examination will be found in the Regulations for Matriculation, obtainable free on application to the External Registrar of the University. The examination is conducted in London and numerous provincial centres; also in certain cities of the Colonies and India.

College of Preceptors Certificate.—For many years before the Pharmaceutical Society of Great Britain gave up its Preliminary examination the questions in the examination were set and adjudicated upon by the College of Preceptors, Bloomsbury Square, London, W.C., and since the Society's own examination has ceased most chemists' apprentices in England enter for a special professional Preliminary examination which is held by the College in London and in provincial centres in March and September yearly. The subjects of this

examination are as required by the Society. Full details of the requirements in English, Latin, French, German, arithmetic, algebra, and Euclid are set forth in the regulations, copies of which can be obtained gratis and post-free from Mr. C. R. Hodgson, B.A., Secretary to the College, at the above address. Twenty-eight days' notice has to be given for the professional Preliminary examination, the fee for which is 25s. *Note.*—In the case of most boys and girls in England who are entering pharmacy, the necessity for the professional Preliminary examination should not arise if their teachers are informed two years or so before they leave school that they are intended for pharmacy, because thousands of school pupils annually enter for the College's school examinations and the second and first class certificates covering the necessary subjects are recognised by the Pharmaceutical Society. Obviously, then, the proper plan is to get the second-class certificate before leaving school. The examinations for this certificate are held in London and local centres at midsummer and Christmas yearly, and the fee for it is 10s. 6d.

Educational Institute of Scotland.—This body does for Scotland similar work to that done by the College of Preceptors in England, and it has a special examination for pharmaceutical and professional students, which is held in Edinburgh, Glasgow, London, Liverpool, and Dublin in January, April, July, and September of each year, the fee being 1l. and 10s. for each subsequent examination. The examination lasts three days, and the pharmaceutical candidates are allowed to take the six subjects in two sittings. Next month the subjects will be divided thus: September 1 (Thursday), English and Latin; September 2 (Friday), arithmetic and algebra; and September 3 (Saturday), geometry and one optional subject. Excellence in one of the three mathematical subjects may help a candidate who is weak in another mathematical subject. The regulations and latest examination papers are contained in the Calendar of the Institute, which can be obtained by post for 1s. from Mr. S. M. Murray, 34 North Bridge Street, Edinburgh, to whom entry forms and fees must be sent not later than five days prior to the examination.

Scots Universities.—The Universities of Aberdeen, Edinburgh, Glasgow, and St. Andrews have a Preliminary examination in common, which is conducted by a Conjoint Board at the respective cities in March and September; fee, 10s. 6d. The subjects are English, Latin or Greek, mathematics, and an approved foreign language or dynamics, the mathematics being of a higher standard for students proceeding to pure science degrees than for those going forward to medicine. Candidates are permitted to take the subjects at two sittings of the examination.

In Scotland leaving certificates of the Scotch Educational Board are popular, and if the examination subjects have been covered in two sittings, these certificates are accepted for registration as students of pharmacy. Advice in regard to these certificates is almost outside our province, as they are a matter for consideration while the youths and girls are at school. The same applies to the certificates obtainable in the Local examinations of the Oxford, Cambridge, and Welsh Universities and the Junior examination of the Central Welsh Board of Education. Particulars of all these may be obtained from the Registrars of the Universities or the Clerks to the Boards.

Provincial English Universities.—The Universities of Leeds, Liverpool, Manchester, and Sheffield have a Matriculation examination in common, held twice yearly, in July and September; fee, 2l. The subjects are English (language or literature), English history, mathematics, and three others, including a language, out of nine specified groups. Full particulars are given in the Board's syllabus, for which write to the Secretary, Joint Matriculation Board, 24 Dover Street, Manchester. (*Note.*—The Senior School certificate of the Joint Matriculation Board is accepted by the Pharmaceutical Society of Great Britain, but not the Junior.) The Birmingham University Matriculation examination is held in June and September in the following subjects: English (language, literature, and history), Latin, mathematics, a foreign language, and chemistry or experimental mechanics. For syllabus, address Mr. G. H. Morley, The University, Birmingham. The Durham University conducts its own Entrance examination, six subjects (additional mathematics, English and English history (compulsory), and three others (selected) being prescribed, which must be passed at one sitting. The examination is held in March and September; fee, 1l. 10s. For further particulars apply to the Rev. H. Ellershaw, University Offices, North Bailey, Durham. The Cambridge and Oxford Entrance examinations include Greek, and students proceeding to degrees first become residents of one of the colleges and take the B.A. degree.

Wales.—The University of Wales conducts its Matriculation examination at Aberystwyth, Bangor, and Cardiff in July and September. The compulsory subjects are Latin, English, and mathematics, while two other subjects must be selected from several optional ones. Full particulars can be obtained from the Registrars of the constituent Universities: Mr. J. Mortimer Green, Aberystwyth; Mr. John E. Lloyd, M.A., Bangor; and Mr. J. Austin Jenkins, Cardiff.—The Junior examination of the Central Welsh Board of Education is one adapted to the Welsh student leaving school. The fee is 5s. Particulars can be obtained from the Clerk of the Board, Cardiff.

Irish Universities.—The Irish Universities Act, 1906, established two new Universities—the National University of Ireland and the Queen's University, Belfast. The regulations require the candidate to pass in five subjects, viz.: Latin or Greek; Irish or any other approved modern language; English or history and geography (one subject); mathematics or physics; one other subject not already selected above from the following list: Irish, English, Latin, Greek, French, German, Spanish, Italian, and any other modern language approved by the Senate; history and geography, mathematics, physics, chemistry. Students not taking Irish at Matriculation have to attend subsequently a course in Irish language, literature, and history. The examination is held twice yearly, in June and September; fee, 1l. A pamphlet on the University's regulations and courses can be obtained from Messrs. Thorn & Co., Middle Abbey Street, Dublin, price 3d.—The regulations of the Queen's University, Belfast, require for matriculation for the Faculty of Science a pass in five subjects selected from the following: English, mathematics, and any three of the following (of which two must be languages)—Greek, Latin, French, German, physics, geography, chemistry. The examination is held twice yearly, in summer and autumn. Fee, 1l. 1s.

Scholarships and Prizes.

THE following notes give brief particulars of the several opportunities which there are for pharmaceutical students in the shape of scholarships and prizes. An idea is given of the scope of these competitions, but it will be seen that some are strictly limited and others open to all students. Full details can be obtained on applying at the under-mentioned addresses.

NATIONAL SCHOLARSHIPS.—*Local exhibitions* in science are granted at the discretion of the local education authority (who must contribute about half of the funds) usually by competition in connection with the Board of Education's annual examinations in science. The exhibitor may pursue his studies (tenable on application for three years) at the local institution, or may exercise his option of taking his instruction at the Imperial College of Science and Technology. A maintenance allowance is included in the award. The standard attained in the competition must be comparable with that of a Royal or of a National Scholarship.

Royal Scholarships to the number of eighty (not less than twenty awarded in 1911), tenable at the Imperial College of Science and Technology, are awarded by the Board of Education on the results of their evening examinations (practically for the highest marks obtained on Honours subjects). The

scholarship entitles the holder to free admission to the lectures and laboratory-work and a maintenance allowance of 60l., with third-class railway-fare to and from his home once each session.

The Free Studentships in science are awarded under similar conditions as the Royal Scholarships, and total forty-five (not less than eleven in 1911). The studentship entitles the holder to free tuition at the Imperial College of Science and Technology.

JACOB BELL SCHOLARSHIPS.—The Pharmaceutical Society offers annually two scholarships as a memorial of Jacob Bell. The award comprises free education at the Society's school and 25l. in cash, with books to the value of 2l. 10s. The scholarships are open only to student-associates of the Society not less than twenty or more than twenty-two years of age who have been engaged for not less than three years in the pharmacy (*i.e.*, open shop) of a pharmaceutical chemist or a chemist and druggist. The examination is held on the third Tuesday in June, at London, Edinburgh, and Manchester. Application for admission must be made on or before June 1 to Mr. Richard Bremridge, 17 Bloomsbury Square, London, W.C. The subjects of the examination are:

Latin.—Translation of "unseen" passages. Latin into English, English into Latin.

French or German.—Translation of "unseen" passages. French or German into English, English into French or German. **Chemistry, Pharmacy, and Botany.**—A three hours' paper dealing with these subjects in their relation to the British Pharmacopoeia. The questions will be based upon an elementary knowledge of the principal chemicals, drugs, and processes of the British Pharmacopoeia such as a student may reasonably be expected to have acquired during apprenticeship.

THE MANCHESTER PHARMACEUTICAL ASSOCIATION SCHOLARSHIP is open to student-associates of the Pharmaceutical Society who have been engaged for not less than three years in the pharmacy of a pharmaceutical chemist or a chemist and druggist in Lancashire, Cheshire, or the High Peak Parliamentary Division of Derbyshire. It has an annual value of about 26*l.*, which is spent in paying for school tuition. The other conditions of entry and competition are similar to those of the Bell Scholarship, except that the age limit is not less than nineteen or more than twenty-one. The winner of this scholarship may study in any provincial school of pharmacy or in the Society's school. The scholarship frequently goes begging.

FAIRCHILD SCHOLARSHIP AND PRIZES.—One scholarship of 50*l.* and four prizes of 5*l.* each are awarded annually by a Committee of Trustees on behalf of the donors, Messrs. Fairchild Bros. & Foster, London and New York. The awards are open to any registered student of pharmacy in the United Kingdom, between the ages of twenty and twenty-two, who has fulfilled the conditions of entry for the Minor examination of the Pharmaceutical Society of Great Britain or the Licence examination of the Irish Society. The examination comprises written papers in elementary chemistry, elementary materia medica, practical pharmacy, prescription-reading, and elementary business knowledge. The candidate obtaining the highest aggregate number of marks is awarded the scholarship, and out of it he must pay school-fees for not less than three months at any scholastic institution he may select to enable him to prepare for the Minor examination of Great Britain or the Licence examination of Ireland. Any of the money not used in this manner is paid to the student for maintenance. The prizes of 5*l.* are awarded to the best students in England, Wales, Scotland, and Ireland. The questions set in this year's examination were printed in the Coloured Supplement of *THE CHEMIST AND DRUGGIST* of June 25, and the results were given in our issue of last week (Coloured Supplement). The examination syllabus can be obtained from Mr. A. E. Holden, Secretary, Albert Chambers, 64 and 65 Holborn Viaduct, London, E.C., with whom entries must be made for the next examination before June 1, 1911. The candidates may be examined at any of the following centres—Cardiff, Dublin, Edinburgh, London, and Manchester—at which the examination is held in June.

"CORNER FOR STUDENTS" PRIZES.—*THE CHEMIST AND DRUGGIST* founded these competitions for students in 1868. At no time was their popularity greater than it is to-day. Exercises in qualitative chemical analysis are provided, for which two book prizes are offered monthly. A tournament is conducted throughout the winter session, the marks each month being registered, and the three competitors who receive the highest number are awarded parchment certificates and book prizes to the value of 2*l.* 2*s.*, 1*l.* 1*s.*, and 10*s.* 6*d.* Prizes are also awarded to any student whom the conductor of the "Corner," Dr. Leonard Dobbin, judges to have made meritorious progress.

HERBARIUM PRIZE.—The Pharmaceutical Society of Great Britain offers medals and certificates to its student-associates for a herbarium of British plants collected in any part of the United Kingdom, the Channel Islands, or the Isle of Man, between January 1 in one year and July 1 in the year following. The collection must not exceed 150 specimens, which must be selected and mounted to display the characteristic features of the more prominent and typical genera of the chief British natural orders. Particulars can be obtained from Mr. Bremridge, 17 Bloomsbury Square, London, W.C.

THE ABERDEEN PHARMACEUTICAL ASSOCIATION offers to local apprentices a scholarship for attendance at the pharmaceutical classes at the School of Pharmacy of Robert Gordon's Technical College. Particulars can be had on application to the Secretary of the Association, Mr. W. F. Hay, 29 Rose Street, Aberdeen.

BOWMAN PRIZES.—Six book prizes, of an aggregate value of 10*l.*, presented by Mr. W. P. Bowman, are offered annually by the Leeds Chemists' Association. The questions are in chemistry and pharmacy, and are in two sets—one for juniors and the other for seniors. The syllabus is obtainable from Mr. J. R. Bentley, Hon. Secretary, 85 Kirkgate, Leeds, with whom entries must be made before March 1.

THE EDINBURGH ASSISTANTS' ASSOCIATION offers several prizes for competition among its members only, including a ticket for attendance at chemistry classes and prizes for botany.

MUTER SCHOLARSHIP.—A free tuition scholarship, tenable in the South London School of Pharmacy, 325 Kennington

Road, London, S.E., is offered for competition in September each year. For printed particulars apply to the Secretary of the school.

Post-Graduate Awards.

The foregoing paragraphs refer mainly to competitions for which the pharmacist is not eligible. The following are awarded subsequent to the qualifying examination.

THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN offers annually three medals for competition by pharmaceutical chemists who have passed the Major examination during the year. The examination is in materia medica, botany, and chemistry, and is held shortly after the Major examination in April. The Registrar communicates with each person entitled to compete, advising him of the matter. The first prize is the Pereira Silver Medal and 5*l.* worth of books; second, the Society's Silver Medal; third, the Society's Bronze Medal.

The Society also has in its gift the following scholarships:

The Redwood Scholarship, of the value of about 60*l.* in cash, which is awarded every second year to a pharmaceutical chemist, and enables him to work in the Society's research laboratory.

The Burroughs Scholarship of 60*l.* is a similar award every second year.

The Satters' Research Fellowship in chemistry, of the annual value of 100*l.*, is awarded for a similar purpose.

THE PHARMACEUTICAL SOCIETY OF IRELAND.—The Council awards annually a gold and silver medal to pharmaceutical chemists who have during the year passed the Licence examination and obtained the following standards of marks: for the gold medal, not less than 240 marks out of 300, and sixty-five in each of the three subjects; for the silver medal, 230 marks out of 300, and sixty in each of the three subjects.

THE HEWLETT MEMORIAL EXHIBITION is awarded on the recommendation of the Professors of the Pharmaceutical Society's School to the student (other than a Bell scholar) who is most successful in the examination for the school prizes in the elementary course. The exhibition is about 15*l.* in value, and it pays the fees of the successful candidate for the advanced or Major course.

THE KINNINMONT PRIZE, awarded annually, is open to pharmacists residing in Glasgow and the West of Scotland who have passed the Minor at any time from October two years preceding the date of examination. The examination, which is in elementary botany and physics, is held in Glasgow in January. The Hon. Secretary is Mr. W. L. Currie, 223 Byres Road, Dowanhill, Glasgow.

APPOINTMENTS.

Dispensers.

METROPOLITAN ASYLUMS BOARD.—The salary paid by the Board for the post of dispenser is 100*l.* per annum, rising by annual increments of 5*l.* to 130*l.*, with dinner and tea daily.

ARMY DISPENSERS are non-commissioned officers in the Royal Army Medical Corps, who pass examinations in pharmacy, materia medica, posology, and similar subjects conducted by the medical officers. It is necessary to enlist in the corps, and work up to the position which entitles a man to enter for the examination. In larger hospitals practically all non-commissioned officers of the rank of sergeant and upwards are dispensers.

BOARDS OF GUARDIANS.—Poor-law dispenserships under the Local Government Board of England are open to those who hold certificates as Licentiates of the Society of Apothecaries, London; apothecaries' assistants (under the English Act); Army compounders; chemists and druggists (G.B.), or pharmaceutical chemists (Ireland). Salaries begin at 120*l.*, and can be increased by 20*l.* after four years, and then by biennial increments of 10*l.* until a maximum of 180*l.* a year is reached in the metropolitan area. In the provinces there is no fixed limit, the salary being fixed and varied by the Guardians of each Union, with the sanction of the Local Government Board. Dispensers receive pensions on retirement through age or ill-health, a deduction from the salaries being made in respect to this arrangement.

NAVAL HOSPITALS.—There are eighteen berths for dispensers at home and abroad. Candidates for vacancies (which are advertised as they occur) must be chemists or druggists or pharmaceutical chemists, and not more than twenty-eight years old. The pay commences at 110*l.* per annum, with biennial increments of 5*l.* until 130*l.*, then by 10*l.* every two years to 230*l.* Additional allowances of from 20*l.* to 40*l.* a year are made to dispensers in charge of stores; 20*l.* is also allowed to the dispenser instructing the Sick-berth Staff at Haslar. Free quarters are provided, and allowances made to those serving on foreign stations to meet the increased cost of living. Pensions are granted on retiring. Entry into the Service is by examination, conducted by the Civil Service Commissioners, but the candidates are first selected by the

Medical Department of the Navy, 18 Victoria Street, S.W., to the Director-General of which Department applications respecting vacancies and nominations should be addressed.

PRISON SERVICE.—The regulations for compounders in English and Welsh prisons admit applicants between the ages of twenty-four and thirty-five years, inclusive. Candidates must hold a qualification of the Pharmaceutical Society of Great Britain, and must satisfy the Civil Service Commissioners as to their abilities in reading, writing, orthography, and arithmetic. The duties consist of dispensing medicines, assisting in keeping medical records, keeping medical and surgical instruments in order, assisting in the performance of surgical operations, doing the duties of hospital warder when necessary, and keeping the dispensary and its stores. The scale of remuneration is 105*l.* per annum, rising by 2*l.* per annum to 125*l.*, then by 5*l.* per annum to 150*l.*, with quarters, or 15*l.* 12*s.* per annum in lieu thereof. An application-form for appointment to the subordinate staff in the prison service has first to be obtained from the Civil Service Commissioners, Burlington Gardens, London, W.

Analysts.

The following appointments, mainly for analytical purposes, are held by persons who have specialised in certain directions.

THE ADMIRALTY, Whitehall, London, S.W., employs several chemists at Portsmouth, and as inspectors of victualling-stores at Deptford, Gosport, and Plymouth.

AGRICULTURAL ANALYSTS are appointed by County Councils under the Fertilisers and Feeding-stuffs Act, subject to the approval of the Board of Agriculture.

THE WAR OFFICE, Whitehall, S.W.—The Civil Service Commission publishes the regulations for examination for assistant chemists in the Department of the War Office Chemist at Woolwich. Age-limit, twenty to twenty-five.

THE PATENT OFFICE, Southampton Buildings, London, W.C., appoints examiners of patents, and some of these need to be chemists. Particulars of the open competitive examinations are obtainable from the Civil Service Commission, Burlington Gardens, London, W. Age-limit, twenty to twenty-five.

THE METROPOLITAN WATER BOARD, 20 Nottingham Place, London, W.—All the appointments upon the chemical and bacteriological staff of the Board's laboratory have been made up to the present as the result of public advertisement, but vacancies will usually be filled by promotion if there is a suitable applicant in one of the Board's departments.

GOVERNMENT LABORATORY CHEMISTS usually enter the Government Laboratory through the Inland Revenue Customs Department, from which temporary assistants are selected by examination. The entry to the latter Department is by examination (age-limit, nineteen to twenty-two), particulars of which can be obtained from the Secretary of the Civil Service Commission, Burlington Gardens, London, W.

GAS EXAMINERS are appointed by public authorities to make independent examination of gas-supplies. In the provinces local professional chemists are usually appointed. The London County Council examines applicants for gas-testing appointments. The successful candidate is then appointed for relieving work, and permanent appointments are made by seniority. Some gasworks employ chemists to take the analytical control of the manufacture of gas.

THE STUDENT'S BOOKS.

To give even an outline of the books needed for all the curricula in pharmacy, medicine, and science would overtax the available space in this journal. We have already mentioned some of the books useful to the pharmaceutical apprentice (p. 263), and below we give lists of books recommended by various metropolitan and provincial schools of pharmacy.

London.

School of Pharmacy.

BOTANY.—Farmer's "Practical Introduction to the Study of Botany" (Longmans), 2*s.* 6*d.*; Cavers' "Plant Biology" (Univ. Tut. Press), 3*s.* 6*d.*; Edmond's "Elementary Botany" (Longmans), 2*s.* 6*d.*; Johnson's "Textbook of Botany" (Allman), 7*s.* 6*d.*; Scott's "An Introduction to Structural Botany" (Black), 2 vols., 3*s.* 6*d.* each; Bower and Gwynne-Vaughan's "Practical Botany for Beginners" (Macmillan), 3*s.* 6*d.*

CHEMISTRY.—Newth's "Inorganic Chemistry" (Longmans), 6*s.* 6*d.*; Perkin and Kipping's "Organic Chemistry" (Chambers), 7*s.* 6*d.*; Page's "Elements of Physics for Medical Students" (Cassell & Co.), 3*s.* 9*d.*; Perkin's "Qualitative Chemical Analysis: Inorganic and Organic" (Longmans), 4*s.* 6*d.*; Clowes and Coleman's "Elementary Quantitative Analysis" (Churchill); Smith's "General Inorganic Chemistry" (Bell), 7*s.* 6*d.*

PHYSICS.—Draper's "Heat" (Blackie), 4*s.* 6*d.*; Edser's "Light" (Macmillan), 5*s.*; Silvanus Thompson's "Elementary

Lessons in Electricity and Magnetism" (Macmillan), 4*s.* 6*d.*; Reychler's "Outlines of Physical Chemistry" (Whitaker), 4*s.* 6*d.*

PHARMACY AND MATERIA MEDICA.—Greenish's "Textbook of Materia Medica" (Churchill), 15*s.*; Greenish's "Microscopical Examination of Foods and Drugs" (Churchill), 10*s.* 6*d.*; Lucas's "Practical Pharmacy" (Churchill), 12*s.* 6*d.*; Bennett's "Medical and Pharmaceutical Latin" (Churchill), 6*s.*; Ince's "Latin Grammar of Pharmacy" (Baillière), 5*s.*

South of England College.

MINOR COURSE.—Newth's "Inorganic Chemistry" (Theoretical); Perkin and Kipping's "Organic Chemistry" (Theoretical); Turpin's "Organic Chemistry" (Theoretical); Jarman's "Inorganic Chemistry" (Practical); Lowson's "Botany" (Theoretical); Edmond's "Botany" (Theoretical); Lucas's "Pharmacy (Practice of)" (White and Humphrey's "Pharmacopœia"); Southall's "Materia Medica"; Bennett's "Medical and Pharmaceutical Latin"; "The Art of Dispensing," or Lucas's "First Lines in Dispensing."

MAJOR COURSE.—Ganot's "Physics" (Heat, Light, and Electricity); Green's "Botany" (Vols. I. and II.); Bower's "Botany" (Practical Histology); Perkin and Kipping's "Organic Chemistry" (Theoretical); Cohen's "Organic Chemistry" (Practical); Newth's "Inorganic Chemistry" (Theoretical); Muter's "Analytical Chemistry"; Southall's "Materia Medica." Pharmacy—White's "Pharmacopœia" and other "Minor" books for reference.

Provincial.

Liverpool School of Pharmacy.

MINOR.—Newth's "Inorganic Chemistry" (Longmans); Perkin and Kipping's "Organic Chemistry" (Chambers); Muter's "Analytical Chemistry" (Baillière); Lowson's "Botany" (Clive U.C.C. Press); Greenish's "Materia Medica" (Churchill) or Humphrey's "Materia Medica" (Kimpton); Ince's "Latin Grammar" (Baillière); Everett's "Physics" (Blackie); British Pharmacopœia (Spottiswoode); Cowley's "Preliminary Testing."

MAJOR.—Newth's "Inorganic Chemistry" (Longmans); Perkin and Kipping's "Organic Chemistry" (Chambers); Greenish's "Materia Medica" (Churchill); Scott's "Botany" (A. & C. Black); Clowes and Coleman's "Quantitative Analysis" (Churchill); Scott's "Chemical Theory" (Longmans); Stewart's "Light" (U.C.C. Press); Stewart's "Heat" (U.C.C. Press); Silvanus Thompson's "Electricity" (Macmillan).

Glasgow School of Pharmacy.

PRELIMINARY.—English.—Trotter's "English Grammar" (Collins), 1*s.*; Arnold's "Language Lessons," Book VI. (Arnold), 6*d.* French.—Heath's "Practical French Grammar" (Harrap), 4*s.* 6*d.*; "Contes et Légendes" (Harrap), 2*s.* 6*d.* Latin.—Allen's "Latin Grammar" (Clarendon Press), 2*s.* 6*d.*; North and Hilliard's "Latin Prose" (Rivington), 3*s.* 6*d.* Euclid.—Mackay's "Euclid," Books I.-III. Algebra.—Hall and Knight's "Algebra for Beginners" (up to Quadratic Equations only). Arithmetic.—"The Preceptors" (University Correspondence College), 1*s.* 11*d.*

MINOR.—Lothian's "Qualitative Analysis Tables," 2*s.* 6*d.*; Newth's "Inorganic Chemistry" (Longmans), 6*s.* 6*d.*; Adie's "Introduction to the Carbon Compounds" (Clive), 2*s.* 6*d.*; Dobbin and Walker's "Chemical Theory" (Macmillan), 2*s.* 6*d.*; Dobbin's "Arithmetical Exercises in Chemistry" (Thin); Lowson's "Textbook of Botany" (Clive), 6*s.* 6*d.*; Southall's "Materia Medica" (Churchill), 7*s.* 6*d.*; British Pharmacopœia, 1898" (Spottiswoode); Ince's "Latin Grammar of Pharmacy" (Baillière), 5*s.* net.

THE BRITISH EAST AFRICA official "Gazette" for June 15 contains the text of a Drugs and Poisons Ordinance (No. 20 of 1909), dated June 10, for regulating the sale of drugs and poisons in the British East Africa Protectorate, to take effect from September 1, 1910. This Ordinance, which repeals the Poisons Regulations, 1902, provides, *inter alia*, that every patent proprietary or homeopathic medicine intended for human use and containing any poison shall bear upon the bottle, case, or other package immediately containing such a medicine a true and exact statement setting forth the fact that poison is contained therein, and the ordinary name of such poison, and any person selling, or keeping for sale, such medicine not so labelled shall be liable, upon conviction, to a penalty not exceeding 750 rupees. It is further provided that the Opium Regulations, 1902, shall not apply to the importation or sale of opium for purely medical purposes by a person authorised or permitted to sell the same under the provisions of this Ordinance.

The Proposed Curriculum.

SECTION 4 of the Poisons and Pharmacy Act, 1908, gives the Council of the Pharmaceutical Society of Great Britain the power of making by-laws to impose what is generally known as a compulsory curriculum, or, in the words of the section :

Requiring persons desirous of presenting themselves for examination to produce evidence satisfactory to the Council that they have received a sufficient preliminary practical training in the subjects of the examination; and providing for periods of time and courses of study in connection with the qualifying examination, and dividing such examination into two parts.

We have thought that it would be of service to obtain the opinions of principals of Schools of Pharmacy as to the lines upon which the curriculum should go, as they are the persons who, even more than examiners, are specially familiar with (1) the pharmaceutical or trade conditions from which students are drawn, (2) the pre-collegiate training of the students, and (3) the curriculum work which they have to do in order to fit themselves for the examination as at present conducted. The proposition which we submitted was as follows :

Assuming that the proposals to be brought forward are on lines that were laid down some twenty-five years ago, when an effort was made to impose the conditions by law, they will probably embrace the following :

1. Candidates must produce evidence of preliminary education and be registered as students before any part of apprenticeship or training is reckoned for the purposes of examination—this substantially being as in the case of dental and medical students.

2. An apprenticeship of three years with or under a registered chemist.

3. Specified courses of lectures in botany, chemistry, and physics and materia medica will be laid down, with minimum periods of practical instruction in chemistry, and probably practical instruction in histology.

4. The examination will be divided so that after the courses of lectures in botany and chemistry the candidate could be examined in these subjects in writing. Having passed this part of the examination, the candidate would proceed with the rest of the curriculum and training, until he reaches his twenty-first birthday, when, or any time thereafter, he might enter for the final part of the qualifying examination.

5. The lectures and laboratory training will be at recognised educational establishments, such as universities, university colleges, and proprietary schools.

In 1885 the principals of the proprietary schools of pharmacy in Great Britain opposed the curriculum by-laws. Our present correspondence indicates that some are still of opinion that the requirements of the retail drug trade do not warrant the imposition of a curriculum in science, while others prefer not to express publicly their opinions on the subject. Nevertheless the following communications should be of service during the year now ensuing, when the terms of the regulations now being drafted for the Pharmaceutical Council are made public, and it may be necessary for members of the Society to consider them and vote for the confirmation or rejection of the by-laws necessary for enforcement of the Regulations.

A. H. Mitchell Muter, F.I.C., F.C.S.,

Director of the South London School of Pharmacy, 325 Kennington Road, London, S.E., says: The proposals have my entire sympathy. Should the changes be carried out, the status of the chemist and druggist should be placed on a higher plane than it is at present, and the calling should rank as one of the professions. This, in my opinion, should be a *sine qua non*, as I fail to see how we can expect the young man to enter upon a training costing so much time and money without being adequately protected when, having proved himself competent by examination, he hopes to reap the reward of his labours.

There can be no possible doubt that the average student enters upon the final preparation for the Minor examination without a proper grounding in chemistry and botany, the extreme value of which I am in a position to speak of from practical experience. The idea that all candidates should be obliged to give evidence of preliminary education and be registered as students before any part of apprenticeship or training is counted for the purposes of examination is an excellent one. During his apprenticeship the intending

candidate should have ample time in which to study chemistry and botany, and the articles of indenture should be drawn up in a form approved of by the Pharmaceutical Society, it being distinctly understood that no registered chemist be permitted to take an apprentice unless he undertake that he and his charge conform to the spirit of the agreement.

The education for the first part of the examination should be of a general nature, so that the candidate can prepare himself during his apprenticeship by attending evening classes, etc., presenting himself, if he wish, immediately after he is out of his articles. I am entirely in favour of the proposal that his training for the Final examination should only be taken at such educational establishments as receive the recognition of the Pharmaceutical Society, and that before he can present himself for examination he must produce evidence of having attended a systematic course of lectures in the various subjects and put in the necessary time for instruction and practice in histology and practical chemistry. During the time that he is engaged in practical work he ought to keep notes of the experiments he has actually performed himself. These note-books should be signed from time to time by his teachers, and be forwarded to the examining authorities before he enters for his examination, in the same way as the candidates for the examinations of the Institute of Chemistry are required to do.

Finally, I wish once more emphatically to give it as my opinion that if the status and "protection" of the chemist is to be allowed to remain in the wretched condition they are in now, I think, in common fairness to the trade, things should remain *in statu quo*.

James Grier

James Grier, M.Sc., Ph.C.,

Lecturer in Pharmacy at the University of Manchester, writes: On January 29, 1902, I read a paper on "Pharmaceutical Education" before the Manchester Pharmaceutical Association, in which was embodied the result of a careful study of this admittedly difficult problem (*C. & D.*, February 1, 1902, p. 193). Since then I have not only given further papers on the subject, but have read with keen interest all the various views which have from time to time been put forward on this subject, and not only have I found it unnecessary to alter my views, but I find that others are now advocating the very things which I then suggested. This, I think, may be taken to imply that the suggestions then made were sound and practical and on right lines. These suggestions are shortly:



MR. JAMES GRIER.

- (a) That the present standard of general education demanded of pharmaceutical apprentices is the *minimum* which a student requires in order to negotiate the scientific and technical subjects of the qualifying examination for a pharmacist. Leaving-school certificates are now being established in English as in Scottish schools, and last week it was reported that the Board of Examiners has approved the addition of the Senior School certificate of the Joint Matriculation Board, Manchester, to the list of certificates which the Registrar is authorised to receive. I am aware that some of our Scottish friends have expressed other views, but, in my opinion, any return to the old standard would be a retrograde step and would not be fair to the students themselves.

- (b) An apprenticeship of three to four years under a registered pharmacist. The Preliminary should preferably be passed before apprenticeship; but inasmuch as many parents and even schoolmasters are not aware of the necessity for this, one year's grace might be given in which to pass the necessary Preliminary, and the employer in these cases would need to give the apprentice the necessary time for study.

- (c) The division of the present qualifying examination into two parts, and in such manner that the purely scientific portion, including the requisite practical in all the three subjects of chemistry, physics, and botany, be taken as the first part. Further, that just as the Pharmaceutical Society has found it no longer necessary to continue holding an examination in general knowledge, so it is now unnecessary to continue holding an examination in general elementary science; and that, just as in the former case so in the latter, certificates from recognised bodies and institutions should

be accepted as satisfactory evidence of training in the three sciences of chemistry, physics, and botany which lie at the basis of all pharmaceutical knowledge. Time for study and permission to attend the necessary classes, day or evening, must be allowed the apprentice unless he should happen to have devoted the last year of his schooling to the study of the required elementary science, in which case it should be credited to him as the first year of his apprenticeship, leaving only three further years to be served. Only such schools should be recognised for the training in pure science as are recognised for that purpose by the Board of Education, both as regards staffing and equipment. I am opposed to the inclusion of a technical subject, like *materia medica*, in the first part of the examination. It is futile to attempt to teach a student applied science—as, e.g., that cocaine is methyl-benzoyl-ecgonine—before he has grasped the elements of chemistry and botany. For similar reasons the training in elementary science should be *general*, not pharmaceutical—e.g., the courses in chemistry, physics, and botany for the First M.B. examination are equally suitable for students of pharmacy, and in fact are those which they now take in the University of Manchester. This, of course, is not the case with the higher or specialised courses in science.

The second part of the examination, which would become the actual qualifying examination, would be devoted to strictly pharmaceutical subjects, and these would be studied at recognised educational establishments, such as universities, university colleges, technical and proprietary schools, provided that all such places complied with the requirements as to equipment and staffing of the Pharmaceutical Society. This examination ought to include simple gravimetric as well as volumetric analysis and the microscopical examination of drug-powders, as a qualified pharmacist ought to be able to perform any estimation of the B.P. (volumetric or gravimetric), and ought to possess a sufficient knowledge of pharmacognosy to examine powdered vegetable drugs. The subjects of the qualifying examination would be: (1) *Pharmacy*, including practical pharmacy and dispensing, prescription-reading, pharmacy law, and posology, this to include a knowledge of poisonous and fatal doses of antidotes. (2) *Materia Medica*, including practical pharmacognosy and possibly the elements of pharmacology—i.e., a knowledge of the action of drugs such as is required of public analysts. (3) *Pharmaceutical Chemistry*—i.e., the identification, estimation, and examination for impurities of all B.P. drugs, including assaying.

Such a rearrangement of the examination would mean very little extension of the present "curriculum" of study, which is not at all necessary; but it would mean a more systematic and thorough training, which, after all, is the thing that really matters.

George Clayton, Ph.C., F.C.S.,

co-Principal of the Northern College of Chemistry and Pharmacy, 102 Burlington Street, Manchester, writes: I consider it most necessary that a person should have passed the Preliminary examination

before any part of the apprenticeship. I believe in the shop apprenticeship, yet I cannot see how the curriculum at a pharmacy school or University, proposed in lieu thereof by some, would fit a person for a pharmaceutical career. The division of the Minor, I am sure, will be good if the interval between the two examinations is not too long. If a compulsory curriculum of training is decided upon, most certainly it should not be a long one—nine months in all, i.e., for both examinations, which will be arranged to replace the present Minor, would be ample.

Already a great diminution in the number of candidates is noticed, and if the examinations are hedged round with still greater difficulties, no one will trouble to qualify, and drug-stores will become general. My experience, extending to nearly thirty years, of pharmacy students makes me confident on this point. I cannot agree with those who state that the majority of students of pharmacy "enter for their examinations without adequate preparation." It may have been so fifteen or twenty years ago, but it is not so now. The percentage of failure in the Minor is not greater than that at other examinations prior to which there is a curriculum. The education in chemistry and botany should be special, and not general, the lectures given at a University to a mixed

gathering of all kinds of students being altogether unsuited to the pharmacy student.

John Lothian, Ph.C.,

Principal of the Glasgow School of Pharmacy, 180 West Regent Street, Glasgow, sends the following scheme of a three years' course of training for students of pharmacy:

FIRST YEAR.—*Winter* (six months).—Physics and elementary inorganic chemistry. Practical exercises in physics, analysis of a single salt, preparation of simple B.P. salts, e.g. PbI_2 , HgI_2 , CaCO_3 , etc. *Summer* (three months).—Elementary botany, mainly objective and practical.

SECOND YEAR.—*Winter*.—Advanced inorganic chemistry. Analysis of two salts, volumetric analysis, preparation of B.P. chemicals, solutions and galenicals. *Summer*.—Advanced botany, classification and practical microscopy.

THIRD YEAR.—Organic chemistry, pharmacy and *materia medica*: preparation of certain official organic compounds. Advanced qualitative analysis, volumetric analysis. Preparation of galenicals, dispensing, drug assays.

Mr. Lothian proceeds to remark: I am of opinion that the teaching in chemistry should have from the earliest stage a pharmaceutical bias, more attention being paid to the chemistry of the Pharmacopœia than is done at present; also that the training should be largely practical and include the preparation of official salts and compounds, as well as their analysis; in fact, somewhat on the lines of Attfield's work. My own practice is to give the student more of the laboratory than the lecture-room. In spite of the higher standard of the Minor examination, I doubt if the present graduate applies his knowledge as well as the graduate of twenty years ago; he is working too much for the certificate. In pharmacy a practical acquaintance with the various processes, such as distillation, fusion, exsiccation, and crystallisation, should be insisted on. Similarly, with regard to botany, the teaching should be objective, and a thorough acquaintance made with medicinal plants in the fresh state. A course of practical microscopy, including section cutting and mounting, should be obligatory. Books should only be used in conjunction with practical work. A sound foundation will thus be laid for the rational study of *materia medica*.

With regard to the Final examination, I should like to see an examination in pharmaceutical chemistry substituted for the present style, somewhat on the following lines:

Make small quantities of salts, e.g. lithium salicylate, ammonium benzoate, strychnine hydrochloride, and lead iodide.

Detect the active ingredient in liquid, powder, lozenge, suppository, or ointment submitted.

Determine the available oxygen in dentifrice submitted.

Find the two ingredients in the mixture given and determine their concentration (e.g. liq. arsenical + potass. bromide). Volumetric solutions provided.

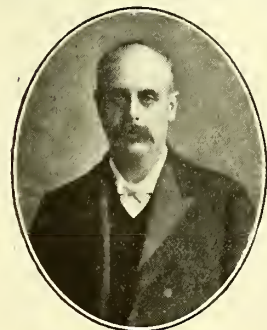
H. Lucas, Ph.C., F.C.S.,

Principal of the South of England College of Pharmacy, 186 Clapham Road, London, S.W., says: Changes are necessary, and wise changes make for progress. Drastic changes are in course of development in the training of "young pharmacy," and it behoves us to look ahead and see in what way we can anticipate and, if possible, help them in the right direction.

The first and most drastic change that I should like to see is the substitution of a collegiate training for the very unsatisfactory present day system of apprenticeship. One year's training at a college of pharmacy would, I consider, be superior in results to those obtained by the three years' apprenticeship at the majority of chemists' businesses, as carried on to-day. It would give the youth in pharmacy a foundation on which to build for his final examination, such training not to be entered upon until the certificate of preliminary education has been accepted and the student registered. The division of the



MR. JOHN LOTHIAN.



MR. GEO. CLAYTON.



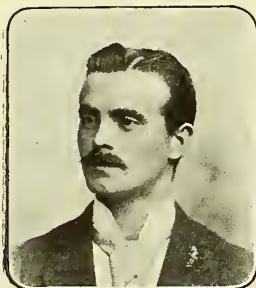
MR. H. LUCAS.

Minor examination is really of secondary importance to this subject of early training, and it will largely depend on how the authorities tackle this problem what the results will be. By division of the Minor I imagine that the practical would be separated from the theoretical, and the whole preceded by a written examination in several of the subjects. The written examination should be of an elementary nature, such as is held for the Fairchild scholarship, and be taken by anyone after their year's training at college. Those reaching the required standard (not too high) should be granted assistants' certificates. The Final examination could be advantageously divided; the practical portion to be taken first, and when that has been passed the theory would follow, or both could be taken together (as at present) at the candidate's option. When a candidate has passed the practical, he or she should be credited therewith, and not asked to pass it a second time.

Chemistry and botany are very large subjects, chemistry especially so, and it is widening every day; therefore it is essential that we as pharmacists and they who follow in our footsteps should specialise in that which appertains to pharmacy. A general elementary knowledge in chemistry is essential to such specialisation, and is obtainable at the average technical schools throughout the country. I do not think that the classes held at the schools of medicine and the lectures given to the medical students would be suitable to the specialised knowledge required by the pharmacist of to-morrow. A more general knowledge of botany is required rather than any specialisation thereon, and the study may be conducted under the guidance of any teacher. My experience shows me that most students of pharmacy leave the study of this subject alone until they join classes for the Minor, when they find they are so "raw" to the subject that they take little or no interest in it. With some earlier knowledge this would not occur.

Gilbert Simpson, Ph.C.,

Director of the Pharmaceutical Department of Robert Gordon's College, Aberdeen, writes:



MR. G. SIMPSON.

My experience confirms the statement that the majority of students of pharmacy enter upon the final preparation for the Minor examination without adequate grounding in botany and chemistry. In my opinion there are three distinct causes of this lack of knowledge of first principles, viz.:

1. The student's apprenticeship is frequently half through and sometimes completed before he passes his preliminary examination.
2. The knowledge that he cannot present himself

before his examiners until his twenty-first birthday causes the student to procrastinate.

3. In the modern pharmacy the preparation of chemicals and galenicals (even of the simplest types) is left almost entirely to the wholesale houses.

Your first proposal would remove cause 1. Your fourth proposal would tend to the removal of cause 2. Cause 3 is my reason for thinking that the education, in chemistry at least, for the first part of the curriculum should be specialised. It should include the preparation of many of the British Pharmacopœial inorganic and organic pure chemicals. The education in botany should include the use of the microscope in the identification of powdered drugs and their adulterations. I would also suggest the inclusion of at least one life history of each of the more important classes of Bryophyta and Thallophyta, also an elementary treatise on bacteriology. Regarding the training after the first part of the examination is passed, I consider the present prescribed area might with advantage be extended to include analysis of urine and of water, in practical chemistry, commercial methods of isolation of alkaloids and glucosides in materia medica, and the methods of standardisation of all ordinary galenicals in pharmacy.

This is certainly raising the standard of the examination, but I do not consider it is too high for the demands made of the chemist and druggist by medical men and the enlightened general public.

David J. Williams, F.C.S., Ph.C.,

Principal of the Bath and West of England College of Chemistry and Pharmacy, Cleveland Place, Bath, says: To all conscientious teachers of pharmacy the truth has been evident for a considerable

time that a large number of students enter upon their career without a thorough knowledge of certain of the foundation subjects. In spite therefore of the fact that it is becoming more and more difficult to see suitable recompense for the outlay necessary to becoming a pharmacist, it seems well to make more precise the system of our education. It is no doubt believed that by this means the prestige of our calling will be enhanced and general betterment of conditions be the ultimate result.

It is considered that chemistry and botany require primary attention, but attempts should be made to apply this knowledge at the earliest possible period. To learn is one thing, but to know how to apply is a totally different matter. Therefore it appears to me, granting that a three years' apprenticeship will be the order of things,

that during that time the student should receive training in chemistry and botany as applied to pharmacy and materia medica. This means that the subjects in question should be as soon as possible specialised, and, therefore, the teaching thereof in the hands of teachers who have made a special study of such. I do not think the lectures usually given to medical students would be suitable. It might be said that to apply one must first know; therefore why not gain a purely general knowledge of the subjects mentioned first? My answer to this is that in these days we cannot afford to lose time, and so once a youth has decided to join the ranks of pharmacy his mind must be directed at the earliest possible time to the use, as far as his calling is concerned, of the knowledge he is gaining.

The curriculum would consist of a fairly comprehensive knowledge of chemistry, botany, and physics as applied to elementary pharmaceuticals. The written examination might consist of papers on these subjects, with special attention to the matter of the British Pharmacopœia and the operations necessarily carried out during the daily life of the apprentice. The training subsequent to this would be of a more comprehensive character, dealing with organic chemistry as applied to modern remedies and dispensing, whilst it is presumed that an increased practical knowledge would be demanded in the examination, both in analytical chemistry, pharmacy, and materia medica; in fact, this Final would become essentially practical.



MR. D. J. WILLIAMS.

Scientific Progress.

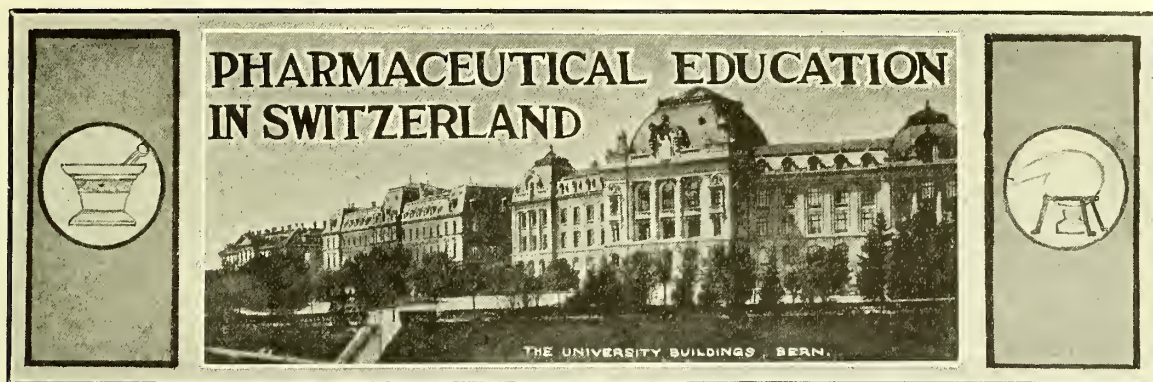
Temperatures under this heading are on the Centigrade scale.

Hydrocyanic Acid in *Thalictrum*.—L. van Itallie has found that the leaves of *Thalictrum* species contained 0.03 per cent. of free hydrocyanic acid, and the acid was present in combination with a glucoside, presumably phaseolunatin, in the stem, flowers, and seeds. The content of hydrocyanic acid was apparently not greatly influenced by variations of season ("Archiv d. Pharm.," 1910, 4).

A Bergamot Oil Adulterant.—O. Wiegand and K. Rübke ("Z. angew. Chem.," 1910, 23, p. 1018) find that triethyl citrate has been used as an adulterant, which, owing to its high saponification value, adds to the apparent linalyl acetate content without affecting other constants. Its presence can be detected by turbidity of the saponification mixture or by its precipitation as calcium citrate. Denigès' method of oxidising the citric acid to acetone dicarboxylic acid with dilute potassium permanganate is preferable, the oxidation product yielding a voluminous precipitate with mercuric sulphate.

Estimation of Total Nitrogen in Urine.—M. Huguet ("Répertoire de Pharm.," November 1909, p. 481), as the results of numerous experiments, recommends the following process for the determination of the total amount of nitrogen in urine:

Sulphuric acid (5 c.c.) is introduced into a 500 c.c. flask, which is heated until vapours begin to be emitted. A mixture of urine (10 c.c.) and a 20 per cent. solution of potassium persulphate (25 c.c.) are added drop by drop and the heating eventually continued until the liquid becomes colourless. Water (10 c.c.) and two drops of phenolphthalein are next added, and the solution neutralised with sodium hydrate and diluted to 100 c.c. The solution represents a 1 in 10 dilution of the urine, and its urea content is determined with hypobromite of soda solution.



THE system of early education in Switzerland (writes Mr. W. Maskew, Ph.C., Clacton-on-Sea) is based on the idea that the general education should be finished before the studies connected with a special profession are commenced at the university. A boy of the age of, say, six begins his compulsory education at an "Elementar Schule," where he remains four or five years. He then goes to the "Gymnasium"—a higher-grade school under State control—where he is taught languages, mathematics,

university, which really occupy two years, the student is trained specially for the different sections of the Final State examination, which may be tabulated as follows:

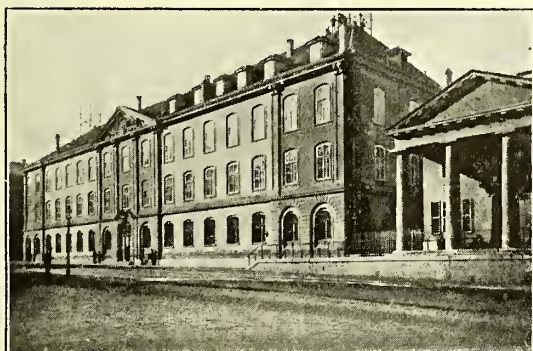
A written examination, with problems in inorganic and organic chemistry and pharmacognosy.

A practical and oral section, including making of chemical preparations, the assay of drugs by chemical and microscopical methods.

An examination in analytical chemistry, including qualitative and quantitative analysis of mixed chemical substances, as well as a detection of poisons in food-stuffs and of adulterants.

Other sections of the examination are pharmaceutical science, including recognition, nature, and characters of crude drugs and plants, and also a general scientific examination, including physics and botany. On successfully negotiating this final examination the candidate is qualified to own or manage a pharmacy.

To gain an idea of the instruction which pharmaceutical candidates receive Mr. Maskew visited the Pharmaceutical Institute of the University of Bern, which is especially interesting to British pharmacists, as the director, Dr. A. Tschirch, is the most recent Hanbury medallist. Dr. Tschirch has been director of the laboratory since 1890 and is assisted by Professor Oesterle. The spacious lecture-rooms, museum, the steam, research, and students' laboratories are arranged on the first floor. The materia medica museum is uncommon in style of arrangement, and in addition to the thousand-and-one specimens which usually form the basis of a museum of this type there is shown a collection of drugs in their original packages, or as they would appear in the drug-markets. In the photograph we can easily recognise the bales of sarsaparilla, cortex aurantii, and fructus anisi stellati, original containers of cajuput,



PHARMACEUTISCHE INSTITUT, BERNE.

and natural science. This gymnasium period extends to eight years, when the student takes either a school-leaving or preliminary examination certificate, which is almost equivalent to the degree of B.A. in this country.

The future Apotheker is then apprenticed for two years, during which time he becomes initiated into laboratory work and the manufacture of Pharmacopœia preparations and chemicals. He must keep a notebook containing a record of the work done, and also collect plants and form a herbarium. He may do dispensing only under the direct supervision of a qualified man. The apprentice then may sit for the Assistant examination, which is divided into three parts—written, oral, and practical. The candidate is required to elucidate chemical and physical problems, prepare and reckon cost of prescriptions, ascertain if certain substances are correctly prepared, and also to recognise materia medica specimens, chemicals, and dried plants. The entrance-fee for this examination is 60f. Successful candidates receive a certificate which entitles them to dispense and to be left in charge during the temporary absence of the owner. One year as certified assistant is then obligatory, and the assistant usually prolongs this period and gains experience in different pharmacies, earning 6l. or 7l. per month. The period thus spent is called the "Conditionszeit." Before qualifying, four terms of study must be undergone at a university or technical high school where there is a pharmaceutical examining body consisting of university professors, together with one or two pharmacists. Proof must be furnished of having undergone the prescribed stages of experience and preliminary examinations. During his four terms at the

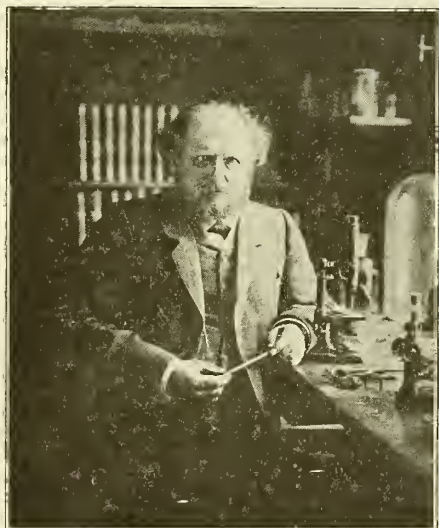


MATERIA MEDICA MUSEUM AT THE PHARMACEUTISCHE INSTITUT, BERNE.

orange, and geranium oil, as well as packages of opium, tea, and cardamoms. Above these will be noticed a photograph of Professor Fluckiger, who was also a Hanbury medallist.

The microscope-room is a large apartment, most efficiently equipped and well lighted. In addition to the

necessary microscopes for the study of advanced morphology and physiology of plants, the detection of adulterants in food-stuffs and drugs, there are also diagrams, photographs, and drawings to help the student. In the research laboratory is installed a steam plant, stills, vacuum pans, and all that is necessary for the disintegration of solid substances, as well as evaporation and desiccation in the various pharmaceutical and chemical processes.



PROFESSOR TSCHIRCH IN HIS LABORATORY.

There is also a students' chemical laboratory where qualitative analysis is taught, and an additional laboratory for the advanced students, where volumetric and gravimetric analyses are conducted, also the assay methods of the official preparations and the estimation of alkaloidal strengths. The auxiliary rooms include the balance, store, and preparation rooms, as well as the professor's private laboratory, library, and study. In the library is a collection of books on pharmaceutical subjects in all languages, and in close proximity to the desk in the centre is a neat piece of furniture designed for the reception of current scientific journals from various parts of the world, the *C. & D.* being placed in a conspicuous position. The planning of the interior of the whole building has been so well conceived that, though the institute is devoted exclusively to the study of pharmaceutical science, it ranks as one of the most efficient scientific institutions of its kind in Europe.

There is, of course, a definite syllabus of study, at the end of which is the examination for the degree of "Diplomierter Apotheker." In the institute there also exists a division for advanced scholars who desire to continue their studies in pharmacognosy. Here many students have been instructed from Switzerland, Germany, Austria, Italy, Holland, Finland, Russia, America, Greece, and Japan. Most of them reached the degree of Ph.D., and some of them are now teachers in pharmacognosy in their native land. The publications of the pharmaceutical laboratory at Bern up to now fill twelve volumes. At the present time changes in the Swiss curriculum are contemplated, and various proposals have been discussed by the Swiss Pharmaceutical Society and referred to in the *C. & D.*

A special commission was appointed to deal with the whole question, and the definite plan now decided upon will be laid before the members of the Society at the forthcoming annual meeting. The new curriculum foreshadows some important changes in the Swiss pharmacist's professional training, which will be divided into three distinct parts, each marked by a final examination. The first of these, to be completed with the examination in natural sciences, will take place after a course of three semesters spent at a university hearing certain lectures and attending certain practical courses. This examination will be in part oral and in part consist of practical work to be done by the candidate. After passing this examina-

tion, the budding pharmacist will be required to spend at least eighteen months engaged in practical work under a qualified Swiss pharmacist, at the end of which he will be required to go up for the Assistant examination, which will be conducted by a commission composed of two pharmacists in business and the local president of the Society's branch. This examination will have a purely pharmaceutical character, and the candidate will be required to (1) prepare two galenical preparations according to the formulas of the Swiss Pharmacopœia; (2) make up four prescriptions and undergo an examination in dispensing; (3) carry out a qualitative analysis of two official chemical preparations; (4) recognise official drugs. After passing the Assistant examination, a university study of three semesters is to follow, at the close of which the Professional Pharmaceutical examination will be held. This is to be divided into a practical and oral examination. In the first part the candidate will have to prepare two chemical preparations and write a report on the same; to quantitatively analyse at least two official preparations and make out a report; carry out one practical pharmaceutical or a toxicological analysis with a written report; and determine a number of substances with the aid of a microscope. In the oral examination questions relating to pharmaceutical chemistry, toxicology, pharmaceutical botany, pharmacognosics, the Pharmacopœia and its analytical methods, the elementary principles of hygiene and of bacteriology will be asked. After passing this last examination the pharmacist will have to spend another year as an assistant in a Swiss pharmacy, and at the expiration of this period he will be granted the diploma. The interesting point of the new proposals is the sandwiching of the practical work in the pharmacy between a preliminary course of university study and another more specialised course. The curriculum of the Swiss pharmacist will therefore embrace a period of five and a-half years, of which two and a-half will be spent in a pharmacy and the remainder at the university.

William the Porter.

His Philosophisings as recorded by Bruce Logan.

VII.

"WELL! well now! so we're to have a lady assistant, eh?" queried William, as he nimbly balanced on the top of an empty cask, while making a strenuous endeavour to reach a bottle from the topmost shelf.

"Ah, dear me! but times do change, and we older folks find it a bit difficult to get into t' way they have o' thinking nowadays."

"Mind ye, not as I say but what a lass has as much right to be in this here shop as we have; but it kind o' pains me a bit to see 'em do it."

"'Twas only t' other night as I heard th' old parson telling 'ow it was, and he said 'twas th' economic conditions as was responsible."

"Well, I can't say as I really knows what them exactly be. But if they causes young women to give up baking pies for t' sake o' bumping pill-mass about—then I think they want seeing to, whatever they be."

"But one thing I'm right sorry about—Master Charles says as he's a-going to give her a pretty rough time of it."

"Well, now, that be hardly fair, 'cause ye can't have fair fighting when ye've got uneven sides."

"Ay, an' it doesn't strike me as very manly to bully a bit of a girl, whatever t' circumstances of t' case might be."

"Nay, says I, give 'em a chance, 'cause they can't punch ye into a better state o' mind as a man might do."

"Ay! naturally we do forget sometimes; but ye mustn't overlook t' fact that, though she have all t' certificates in Bloomsbury Square, a woman is but a woman—an' women be terr'ibly frail and sensitive sort o' critters."

"So give 'em a chance, an' if they're not clever enough to hold their own, well then, ye'll not be long troubled with 'em."

"What if they do be clever enough to hold their own? Well, to be nasty with 'em then would be worse than ever, 'cause it would show foolishness as well; for it be only a fool as can't respect someone cleverer than himself."

Minor Experiences.

Fairchild Scholar (139/36) tells of his experiences in the London Minor examination, as follows:

In DISPENSING I was made a present of the following:

Liq. plumbi subacet. fort. ʒiv.	
Send ʒiv. of HgCl ₂ in glycerin 1 in 500, weight in weight.	
Zinci oxid.	ʒiiss.
Acid. salicyl.	gr. xxx.
Paraff. molle ad ...	ʒiiss.
M.d.u.	
Ol. olivæ	ʒj.
Acid. oleic.	℥xxiv.
Muc. acaciæ	q.s.
Aq. laurocerasi	℥lxxx.
Aq. ad ...	ʒviij.
ʒj. t.i.d.	
Acid. arsenios.	1 milligram.
Pulv. piper. nig.	½ decigram.
Glycyrrhizæ ...	1 decigram.
Ft. pil. Varnish. Mitte xxiv.	
Sig.: j. t.d. p.c.	

PRACTICAL CHEMISTRY in the afternoon consisted of the estimation of grams of arsenic per 1,000 c.c. of liq. arsenicalis, and of a salt which proved to contain mercury and zinc sulphides with distinct traces of sulphate. As a result I was requested to attend for the second day's examination, and on doing so was despatched to

PHARMACY.—Tr. aurant. was given for recognition. How is it prepared? Explain process of maceration. Recognise pulv. glycyrrhizæ: how prepared from root? How is spt. ætheris co. prepared? Describe and point out apparatus required. Recognise and describe a filter-pump, still-head, reflux condenser, and Soxhlet's extractor. How are ext. strophanth. and lin. pot. iod. c. saponi prepared? In what part of the schedule is Easton's syrup? "Give reasons for your answer." My next subject was

CHEMISTRY.—Here I had to name all the mercurial preparations that I knew. What are the properties and preparations of mercuric iodide, mercuric ammonium chloride, and mercuric chloride, and why is the formula of the last-named given as Hg₂Cl₂, and not HgCl? What is a likely impurity in mercuric chloride, and how is it detected? Define decomposition, dissociation, vapour-density, and method of finding the latter; also its uses. What is the vapour-density of ammonium chloride? What are an amine, amide, acetamide, and how are they prepared? State the action of potassium hydrate on acetamide.

MATERIA MEDICA followed, with questions on habitats. Then stramonium-leaves, benzoin, guaiacum resin, acacia, and varieties of these drugs were given to recognise, with questions as to method of distinction, preparation, B.P. tests, etc.

PRESCRIPTION-READING opened with three simple calculations; then two prescriptions were to be rendered into full Latin. Next I was asked the strengths of liq. morph. acet. and liq. Fowleri, and the doses of arsenious oxide, strychnine, strychn. hyd., ferri arsenas, potass. bichromate, mercuric iodide, tr. opii, and tr. iodi.

BOTANY was the last subject. I had first to recognise the floral formulæ of the *Liliaceæ*, *Leguminosæ*, and *Cruciferae*, and then to write those of the *Compositæ* and *Solanaceæ*. A portion of a horse chestnut, a composite, and a parasitic plant were given to recognise, and the definition of a parasite was asked. What is the use of chlorophyll and enzymes? What are the latter? Why does a tree on a sloping bank grow erect? The recognition of a monocotyledonous plant and a slide of a Pteridophyte brought the examination to a close, the congratulations of the President quickly following.

AFTER having six months' training for the Minor, I paid my fee and duly received my notice to appear at Galen Place for the practical examination at the July meeting of the Board. After addressing the envelope provided to myself and waiting, I was sent to practical pharmacy and dispensing in the large room, my paper being the following:

Ext. filicis liq. ...	ʒij	Menthol.	gr. ss.
Pv. acaciæ ...	q.s.	Creasoti ...	℥j.
Aq. menth. pip. ad ...	ʒiiss.	Bism. carb. ...	gr. ij.
M. Ft. haustus.		Pv. opii ...	gr. ss.
Sig.: Modo dictu sumendum.		M. Ft. pilula sec. artem. Varnish. Mitte tales xij.	
Liq. Fowleri op.		Sig.: Unus quatuor horæ sum.	
Liq. amm. citratis op.		Potassi iodidi ...	ʒj.
Make the above solutions and fill two 6-oz. bottles, and use the remainder for dispensing the mixture.		Liq. arsenicalis ...	ʒj.
		Liq. amm. citratis ...	ʒiij.
		Spt. ætheris nitrosi ...	ʒss.
		Inf. quassia ad ...	ʒvj.
		M. Ft. mistura sec. artem.	
		Sig.: ʒss. ter in die sumendum.	

In DISPENSING, the first thing I did was to make my liq. arsen., and during the time occupied in getting the arsenic dissolved I put on my liq. amm. cit. also, and got it exactly neutral, and put then on one side, ready to use in dispensing the mixture. I next made my pills, and found they turned out very nicely, and left them to harden before varnishing. The draught I got emulsified nicely, and proceeded with the mixture, taking particular notice that my spt. æther. nit. should be neutralised. I made the infusion and dissolved the pot. iod. in a portion, and added the liq. am. cit. and liq. arsen., and lastly the spt. æther. nit. The mixture turned out quite colourless. By this time all was finished off and wrapped up, and I awaited the examiner looking at my preparations, which he did, telling me I had done very well and that I might go, the time being only 12.10.

In the afternoon I went to PRACTICAL CHEMISTRY, and had to do my qualitative analysis first, my paper being "Determine the composition of the powder No. —, being a mixture of two substances." I found this to contain bismuth, zinc, oxynitrate, and oxide. My volumetric analysis was "Estimate the liq. arsenicalis solution No. —. The B.P. solution contains 1 per cent. arsenic: how does your solution compare with the B.P.?" This I found contained slightly more arsenic (about 1.08 per cent.). Having completed all by about 4.30 p.m., I was quite satisfied with my first day's work.

After anxiously waiting twenty-four hours, I received my notice to appear for the oral portion of the examination. My first subject was

PHARMACY.—I was asked to recognise several preparations and what they contained, the following being a few: Tr. valer. amm., cretæ arom., conf. sennæ, pil. saponis co., ext. strophanthi, ext. opii, ext. bellad., pulv. antim., elaterin., pulv. cretæ arom. c. opio, pulv. glycyrrhizæ co., tr. hyosey., liq. strychn., liq. atrop. sulph., liq. morph., liq. arsenicalis, and a few more. I was shown percolators; condensers, and retorts, and asked what uses they were put to and how would I make a batch of ext. cascara liq., and show just how to do it; how to evaporate down if necessary, and the vessel I would use; how to distil aq. anethi and aq. destil.

CHEMISTRY.—I was taken on the physical portion first, and asked about specific gravity, air-pump, Boyle's and Charles's laws; sulphur, aluminium, barium, bismuth, phosphorus, aldehyde, chloral, and most of the organic chemistry.

MATERIA MEDICA.—I was shown podophyllum-root and asked what it contained and how to extract the resin; belladonna and gentian roots; hyoscyamus, digitalis, and eucalyptus leaves; paraffin. dur., cetaceum, cera alb. and flav., and a few others which were very good specimens.

In BOTANY I was asked the common names of most of the official plants for recognition. I had fennel and cherry laurel, an umbelliferous and composite plant shown me, and was asked several distinguishing features of the following: *Solanaceæ*, *Umbelliferae*, *Compositæ*, *Leguminosæ*, and *Rosaceæ*. The histological portion consisted of three slides for recognition—a longitudinal section of pine, a dicotyledon section (transverse), and a moss.

PRESCRIPTION-READING.—I was asked to write out in full Latin the prescription handed to me and calculate the quantity of atropine to use in dispensing the same. I had to read in English several prescriptions, and was asked about twenty doses, this concluding the examination.

The waiting for the result was the most trying portion. In conclusion, I must say a few words about the examiners, as one hears so many tales about the troubles and trials fellows receive at the Square. I personally found them all very gentlemanly, and, if anything, they helped me to overcome any difficulty that might have occurred during the exam., and I am quite convinced that the Minor and the examiners are not so black as some are apt to paint them. It is somewhat of an ordeal waiting to be called to the different subjects, and one cannot help noticing the expression on the faces of the candidates—some looking very confident of success, and others very sad and bemoaning their fate and wondering whatever possessed them to go in for pharmacy as a profession.—"Aspirin" to the Qualification of M.P.S. (225/23.)

BRISTOL RED.—In the "Bristol University Gazette" for July an interesting account is given by Miss Ida Roper of the origin of the colour known as "Bristol red," which is to be the colour of the University hoods. It was so called from its coincidence with the colour of the "flower of Bristol," the scarlet lychnis, known as "nonesuch." This is a garden flower, a native of Eastern Europe and the Levant, but introduced into England in the Middle Ages when Bristol was the second port in the Kingdom. At that time also Bristol enjoyed a reputation for dyeing woollen goods a particular red, which seems to have become associated with the colour of the "flower of Bristowc."

Trade Report and Market Review.

The prices given in this section are those obtained by importers or manufacturers for bulk quantities or original packages. To these prices various charges have to be added, whereby values are in many instances greatly augmented before wholesale dealers stock the goods. Qualities of chemicals, drugs, oils, and many other commodities vary greatly, and higher prices than those here quoted are obtained for selected qualities of natural products even in bulk quantities. Retail buyers cannot, therefore, for these and other reasons, expect to purchase at these prices.

42 Cannon Street, London, E.C., August 11.

THERE is little of interest to note in the drug and chemical markets this week, the tone all round having been dull and no improvement is looked for until the autumn. Perhaps the outstanding features are an active demand for cream of tartar and tartaric acid at advanced rates. Acetic acid is firm at the recent higher values, added to which an important Swedish maker has abandoned the manufacture. Copper sulphate is dearer. In drugs, new chamomiles are now on offer. Hydrastis is dearer, jalap firm, and new henbane leaves and guinea grains easier. Opium has advanced 6d. in Smyrna on speculative buying, but London remains apathetic. Persian galls are firm with an advancing tendency. Among spices, pepper has been active and dearer; ginger is steady. The principal alterations have been as follows:

Higher	Firmer	Easier	Lower
Buchu	Cod-liver oil	Aloes (Cape)	Indiarubber
Copper	Coriander	Castor oil	
sulphate	Hydrastis	Guinea grains	
Cream of	Tartaric acid	Henbane	
Tartar		Rhubarb	
Linseed			
Opium			
Pepper			

Cablegrams.

SMYRNA, August 9.—The opium market has suddenly advanced 6d. per lb., as the result of smart buying on the part of speculators and exporters. Quotations are now between 11s. and 12s. per lb. for manufacturing qualities, but a further advance is expected.

NEW YORK, August 11.—Business in drugs is seasonable. Opium is 15c. per lb. lower at \$5.25 for druggists' by single cases. Hydrastis is firmer at \$2.10. Jalap is firm at 37c. Serpentry is lower at 45c. Mexican sarsaparilla is steady at 10c. Cartagena ipecacuanha is firm at \$1.40. Peppermint oil in tins is easy at \$1.80 per lb. Cascara sagrada is steady at 7½c. per lb.

Heavy Chemicals.

A fairly steady demand without material pressure continues to be experienced in the heavy-chemical market for both main and miscellaneous products. Home trade is about normal, while export trade is more than an average for the season of the year. Values for the most part maintain a very steady tone.

SULPHATE OF AMMONIA.—Demand, mostly for the purpose of covering previous sales, continues fair, and prices are steady. There seems to be little disposition on the part of buyers to do more than is necessary at present figures, which are as follows: Beckton prompt, 25 per cent. ammonia guaranteed, filled into buyers' single bags at Beckton, net cash, 11l. 15s.; London, 24½ per cent., 11l. 7s. 6d. net cash; Leith prompt, 12l. 2s. 6d., and forward, 12l. 5s.; Hull, 11l. 17s. 6d.; and Liverpool, 11l. 17s. 6d.

ALKALI-PRODUCE.—Bleaching-powder is in better general demand at 4l. 2s. 6d. to 4l. 7s. 6d. per ton for softwood casks free on rails, and 4l. 10s. to 5l. f.o.b. Caustic soda has continued to move well, and prices are on the firm side: 76 to 77 per cent., 11l. to 11l. 2s. 6d.; 70 per cent., 10l. 5s. to 10l. 7s. 6d.; and 60 per cent., 9l. 5s. to 9l. 7s. 6d. Ammonia alkali, 58 per cent., has been in heavier request, and prices are steady at 4l. to 4l. 5s. per ton free on rails in bags, and

some business has already been concluded for next year. Soda-crystals continue in better request on basis of 52s. 6d. to 57s. 6d. per ton in bags free on rails, and 57s. 6d. to 62s. 6d. per ton f.o.b. Bicarbonate of soda shows a somewhat improved demand at 5l. to 6l. per ton f.o.b. Liverpool, according to packages, etc. Saltcake, steady at 42s. 6d. Chlorates of potash, 3½d. to 3¾d. per lb. Yellow prussiates of potash and soda, 4¾d. to 2¾d. respectively. Hyposulphite of soda is, if anything, in somewhat better request. Ordinary crystals in casks, 5l. to 5l. 10s. per ton, and deliveries in 1-cwt. kegs vary from 5l. 15s. to 7l. 15s. per ton, according to quality and quantity. Silicates of soda, steady: 140° Tw., 4l. 7s. 6d. to 4l. 17s. 6d.; 100° Tw., 3l. 17s. 6d. to 4l. 7s. 6d.; and 75° Tw., 3l. 10s. to 4l., according to quality, quantity, and destination.

Manchester Chemical-market.

August 9.

Returns of exports for the past month are again satisfactory, both for quantities and values. In soda compounds there is an increase of nearly 34,000 cwt.; caustic soda, soda ash, etc., show a fair increase, but in sulphate of soda (salt-cake) the advance is very marked, the quantities for the month being 116,185 cwt., as against 29,224 cwt. in the corresponding month of last year. Crude and distilled glycerin shows an increase of 509 tons in the same period. Judging from the feeling on 'Change, there appears to be a likelihood of a continuance in this district. Caustic soda and bleaching-powder are in fair inquiry. Yellow prussiate and white powdered arsenic are quiet. Contracts for bichromate of soda and potash are being entered into for the next twelve months at old prices. Sulphate of copper continues in request at from 18l. 5s. to 18l. 10s. per ton, best brands delivered Manchester. For delivery January-April 1911, 19l. to 19l. 5s. per ton is quoted. Cream of tartar is about 1s. per cwt. higher on the week. Tartaric and other acids are firmer. In coal-tar products there is not much movement. Sulphate of ammonia is quoted at 11l. 15s. to 11l. 16s. 3d. per ton on rails Manchester.

Continental Drug and Chemical Markets.

ARSENIC.—The worst of the depression should have long since been reached, but signs of an improvement have been looked for in vain, although a larger contract business has again been done lately. In a number of smaller works production is reported to have been stopped because of unremunerative working. At current prices of m.27 to m.29 for white powdered there should be more readiness to cover contracts.

CARNAUBA WAX.—The upward movement in Hamburg continues, and fatty grey lots are particularly strong. On the spot m.270 per 100 kilos, has been paid, while m.260 has been refused for prompt parcels; ordinary grey is held for m.275, although business could probably be done at less. Yellow sorts have become very scarce, and are quoted m.325 to m.425 per 100 kilos, according to quality.

CITRIC ACID.—The absence of the more active demand usually looked for in July has had a subduing effect. At first prices wavered here and there, but then gave way at several places, while offerings have been in excess of the demand. There is still hope of a revival in the demand this month, but should this not be realised, renewed weakness is to be expected. There are already offers made for distant delivery at m.5 per 100 kilos, below current prices.

HYDROQUININE.—Cheap offers are now again being made from which it is inferred that the makers' agreement is no longer observed. Although m.550 per 100 kilos, has been quoted, there are signs that business is possible under that figure.

PLATINUM.—The "Compagnie Industrielle du Platine" has maintained its high price for the metal, and purchases of the raw material are constantly being made at very high prices. Never before have the rates for metallic platinum reached such a high level as at present—viz. 5,300f. to 5,500f.

TARTARIC ACID.—The tone is much firmer, chiefly owing to the advancing prices for raw material. Consumers, too, have purchased more freely, m.180 per 100 kilos, having been paid for spot (Hamburg), while forward delivery could be secured at m.177.50.

London Markets.

ACID, ACETIC.—Supplementing last week's information, it is now announced that one of the principal Swedish makers has relinquished the manufacture. This may be taken as an indication that prices have sunk to so low a level as to render the business unprofitable. Glacial 99 to 100 per cent. B.P. is quoted 33*l.* per ton ex wharf.

ACID, TARTARIC. has shown considerably more activity, especially for next year's delivery, prices being distinctly firmer. The quotations for foreign are from 9*½d.* to 9*¾d.*, but one maker has sold a large quantity at the higher figure. Some of those who handle the article believe that the market will further improve, and advise consumers to cover. It is said that on the present cost of raw material the price should be about 10*¼d.* to 10*¾d.* English is firm at 10*d.*

ANISEED is unchanged at 23*s.* 6*d.* per cwt. for common and 25*s.* for good Russian, and 35*s.* for Spanish.

CANARY-SEED is firm, but, with little business passing, quotations are unaltered at 40*s.* to 41*s.* per quarter for Turkish and ordinary Morocco, 46*s.* to 54*s.* for good to fine Morocco, and 56*s.* to 75*s.* for fair to fine bold Spanish.

CHAMOMILES.—Offers of new Belgian have been made at 72*s.* 6*d.*; the flowers so far are small and greyish. Fair old flowers are offered at 60*s.* spot.

CHILLIES.—At auction 199 bales Mombasa were bought in at 48*s.* for fair.

CINCHONA.—At the Amsterdam auction to be held on August 25, 12,174 packages, weighing about 1,100,732 kilos., will be offered. These consist of 11,099 packages Ledgeriana and Hybrid, 950 cases and 665 bales Succirubra. The first-hand stock at Amsterdam on August 4 consisted of 5,341 packages Government and 21,155 packages private bark.

CLOVES.—At auction 173 bales Zanzibar were bought in at 5*½d.* to 6*d.* for fair, and 10 cases good to fine Penang were bought in at 1*s.* 7*d.* to 1*s.* 8*d.*; privately sellers to arrive quote 5*¾d.* c.i.f. for January-March and November-January shipment, which prices have been paid.

COCA-LEAVES.—At the auction on August 25, 583 packages Java will be offered, weighing 31,800 kilos.

COPAIBA.—Larger receipts in the United States have led to an easier situation there, but on the spot prices are unaltered at 1*s.* 9*d.* to 1*s.* 10*d.* for filtered B.P., as to quality.

COPPER SULPHATE.—A further advance has taken place, ordinary Liverpool brands closing at 18*l.* to 18*l.* 5*s.* per ton, and spring delivery at from 18*l.* 15*s.* to 19*l.*

CORIANDER-SEED is dearer at 11*s.* 6*d.* per cwt. for wormy Morocco, and 12*s.* to 12*s.* 6*d.* for ordinary to good, but some holders ask 13*s.* Russian can be bought at 12*s.* 6*d.* per cwt.

CREAM OF TARTAR.—A good business has been done at prices showing an all-round advance of 1*s.* per cwt.; 99-per-cent. powder is quoted 80*s.*, 98-per-cent. 78*s.* to 79*s.*, and 95-per-cent. 76*s.* to 77*s.* per cwt.

CUMIN-SEED is steady at 33*s.* to 35*s.* per cwt. for common to fair and 37*s.* 6*d.* for sifted Morocco. Malta is offering at 40*s.* on the spot for good new crop.

FENNEL-SEED is quoted 23*s.* 6*d.* per cwt.

FENUGREEK-SEED is firm, but slow of sale at 9*s.* per cwt. for rather weathered new crop Morocco on the spot, and 10*s.* 6*d.* for good sound.

GALLS.—Persian blue are firm with spot sales at from 60*s.* to 62*s.* 6*d.* per cwt., and Chinese are quoted at from 47*s.* 6*d.* to 50*s.*

GINGER.—Jamaica steady at auction, 103 packages selling at 53*s.* for good ordinary, 60*s.* to 61*s.* for fair, and 65*s.* for good bold dullish. Practically 600 packages Cochin and Calicut were bought in; small sales of small cut and scraped were made at 62*s.*, bold cut was bought in at 90*s.*, medium at 75*s.*, and small 60*s.*, brown Calicut rough at 55*s.*, and washed rough at Cochin at 50*s.* per cwt.

GUINEA GRAINS are easier, with offers from Hamburg at 82*s.* 6*d.* per cwt. c.i.f.; spot remains extremely scarce.

HENBANE.—New Russian leaves to arrive are easier at 35*s.* per cwt. c.i.f.

HYDRASTIS.—Holders now ask 8*s.* 9*d.* net on the spot—an advance of 3*d.* per lb.

INDIA-RUBBER.—At the fortnightly auction on Tuesday the larger supplies offered met with a decline of 1*s.* 6*d.* to 2*s.* per lb., but on the following day prices improved about 4*d.* to 6*d.* for pale qualities and 8*d.* to 9*d.* on medium and dark grades, the average decline being from 1*s.* to 1*s.* 3*d.* as compared with the previous sale. Privately hard fine Pará closed on Wednesday at 8*s.* 2*d.* spot and 8*s.* 1*d.* for distant shipment.

LIME CITRATE.—The official quotation of the Camera Agrumaria is 19*l.* 3*s.* per 305 kilos. at warehouses, shipping ports; the terms being net cash on delivery.

LINSEED is again dearer at 70*s.* per quarter for fine quality.

OIL, CASTOR, is lower for Hull make, which is offered at 30*l.* 12*s.* 6*d.* per ton for first pressing for prompt to December delivery, free on wharf London. Belgian of first pressing is 31*l.* 10*s.* for prompt and 31*l.* 5*s.* for September-December, ex wharf London. In Liverpool good seconds Calcutta is quoted at 3*½d.* to 3*¾d.* per lb. for spot parcels and 3*¾d.* for first pressing Belgian.

OIL, COD-LIVER.—From Bergen our correspondent writes on August 8 that the market continues quiet but rather firm, finest non-congealing Lofoten oil being quoted from 100*s.* to 101*s.* per barrel c.i.f. The exports from Bergen up to date amount to 5,750 barrels, against 7,950 barrels at the same date of 1909. Most agents in London are asking firmer prices, which is somewhat unusual for August; from 100*s.* to 103*s.* c.i.f. is quoted, as to brand.

OPTUM.—The chief item of interest is the receipt of cables from Smyrna announcing an advance of 6*d.* per lb., owing to speculative buying, but this market does not appear to have been stimulated by this news, buyers remaining indifferent, hoping to see lower prices as the crop comes in from the Interior.

A correspondent, writing on July 30, estimates the sales at 80 cases (of which 13 are for local speculators), comprising 22 cases prime Karahissar t.q. at the equivalent of from 9*s.* 6*d.* to 9*s.* 10*d.*, 57 cases "extra" Karahissar t.q. at from 10*s.* 3*d.* to 10*s.* 4*d.*, and one case Yerii at 10*s.* 7*d.* per lb. The market closes with a firmer tendency.

Another Smyrna correspondent writes on July 31 that the sales amount to about 100 cases, comprising 40 for U.S.A. from 9*s.* to 10*s.*, 47 cases for the Continent at from 8*s.* 6*d.* to 10*s.* 3*d.*, and 13 cases for speculators at from 9*s.* 6*d.* to 10*s.* as to quality. Market closes firm with buyers, but there are few willing sellers at above figures. It is to be feared that speculators will advance prices to about 1*s.* per lb. above present rates. The arrivals amount to 1,566 cases, against 665 cases at the same time of last year. It may be said that since the above sales holders now ask 90 piastres, or 10*s.* per lb. c.i.f. for Karahissar.

PEPPER (BLACK).—At auction 257 bags Singapore were bought in at 4*¼d.* for fair, 100 bags fair Tellicherry at 4*¼d.*, 36 bags Ceylon sold at 3*¾d.* to 3*¾d.* for greyish, and 100 bags Trang (offered in auction) sold privately at 5*d.* for 6 lb. Privately the market is dearer, fair quality Singapore having been sold at 4*½d.* per lb. spot. To arrive a large business has been done in Singapore description, comprising August-October shipment at 3*¾d.* to 4*d.*, September-November at 3*¾d.*, October-December at 3*½d.* to 4*½d.*, January-March at 4*d.*, 4*½d.* to 4*d.*, also Lampong at 3*½d.* to 3*¾d.* for October-December, and January-March at 3*¾d.* to 3*¾d.* to 3*¾d.* c.i.f. d/w.

PEPPER (WHITE).—At auction 199 bags Singapore were bought in at 7*½d.*, and 75 bags Muntok at 7*½d.* for good; of Siam 115 bags offered and 50 sold at 7*d.* for fair heavy brownish. Privately the market is dearer, fair Singapore having sold up to 7*d.* to 7*½d.* per lb. spot, and to arrive a considerable business is reported, including Singapore for September-November shipment at 6*½d.*, October-December shipment at 7*d.* to 7*½d.*, and January-March at 7*½d.* to 7*½d.*, Penang for September-November at 6*½d.* to 6*½d.* per lb. c.i.f. d/w.

PIMENTO.—Quiet, with sellers to arrive at 20*s.* 9*d.* per cwt. c.i.f. At auction 30 bags sold at 2*¼d.* for fair.

QUILLAIA.—Privately 22*s.* is quoted on the spot, and 21*s.* 6*d.* c.i.f. to arrive. In auction 50 bales were bought in at 22*l.* per ton.

SENEGAL.—Privately, spot is unaltered at 2s. 2d. net and 2s. 1d. c.i.f.

SHELLAC is firm, with a restricted business, on the basis of 87s. for fair free TN orange. Futures are firm, with a fair business, including October at 87s. 6d. and chiefly December at 90s. to 91s.

WOOD OIL.—Two shipments of 305 casks and 2,460 cases have arrived from Hankow, also 1,000 cases from Shanghai.

London Drug-auctions.

At the auction of first-hand drugs only, a dull tone prevailed, the two outstanding features being the keen demand for buchu and new-crop Tinnevely senna, the former drug again showing a considerable advance. The Cape aloes offered was mostly soft and drossy, importers being disposed to meet the market. Only Sumatra benzoin thirds offered and sold at cheap rates. Mysore cardamoms were barely steady for bold, but small and medium went in sellers' favour. Gamboge steady but quiet, and Jamaica honey of middling quality brought previous rates. Ipecacuanha is dull and neglected. Rhubarb was slightly easier on sales without reserve. Native Jamaica sarsaparilla is plentiful, but hangs fire, no grey being offered. Beeswax, unaltered. The following table shows the quantity of goods offered and sold:

Offered Sold		Offered Sold	
Aloes—		Kamala.....	1 ... 0
Cape	60 ... 52	Menthol.....	5 ... 0
Curaçao.....	50 ... 0	Nux vomica.....	45 ... 0
Socotrine (kegs) 50 ... 0		Oil—	
Annatto-seed	5 ... 0	cinnamon	5 ... 0
Benzoin—		eucalyptus	5 ... 0
Sumat.....	44 ... 44	gingergrass(pots) 3 ... 0	
Buchu	22 ... 22	orange	1 ... 0
Camphor—		peppermint	5 ... 0
Jap. ref.	32 ... 8	Olibanum	25 ... 0
Canella alba.....	10 ... 0	Orange-peel (Malta) 11 ... 0	
Cannabis indica ... 3 ... 1		Orris (Mog.)	21 ... 0
Cardamoms & seed 198 ... 128		Papain	5 ... 0
Cascara sagrada... 151 ... 51		Quillaia.....	50 ... 0
Cascarilla	31 ... 0	Rhubarb (China) 13 ... 4	
Cashew-nuts	40 ... 0	Rose petals	1 ... 0
Cassia fistula	6 ... *6	Salep	3 ... 0
Civet (horns)	5 ... 0	Sarsaparilla—	
Coca-leaves	29 ... 4	Lima	24 ... 0
Cochineal	6 ... 6	Native Jam.....	13 ... 1
Colocynth.....	4 ... 4	Seedlac	82 ... 0
Cubebs	39 ... 0	Senega	5 ... 0
Cumin-seed	9 ... 0	Senna and pods—	
Cuttle-fish bone .. 50 ... 0		Alex.	28 ... 9
Dragon's-blood	3 ... 0	Tinnevely	332 ... 311
Ergot	10 ... 0	Tamarinds (W.I.) 65 ... 0	
Fennel-seed	24 ... 0	Turmeric	500 ... 0
Galls	11 ... 0	Wax (bees')—	
Gamboge	8 ... 0	Abyssinian	717 ... 0
Gum acacia	155 ... 15	Australian.....	2 ... 2
Honey—		East African ... 3 ... 0	
Jamaica	94 ... 50	East Indian	48 ... 0
St. Lucia	5 ... 0	Jamaica	2 ... 2
Ipecacuanha—		Morocco	16 ... 0
Cartagena.....	23 ... 1	Zanzibar	42 ... 0
Minas	3 ... 0	Wax (veg.) Japan 25 ... 25	
Jalap	13 ... 13	Zedoary-root	215 ... 90

* Sold privately.

ALOES.—The bulk of the Cape offered was of indifferent quality and mostly soft to softish, for which easy prices were paid; good hard bright was held for 33s., the same price as at the previous sale. The following prices were paid: Mossel Bay on 20 per cent. tares; fair bright hard, 31s. to 31s. 6d.; fair seconds, slightly soft, 29s. to 30s.; common soft and drossy to ordinary dull and soft, 27s. to 28s. 6d.; dull and mixed with dirt, 24s. 6d.; low drossy mixed with dirt, 22s. A parcel of new crop Curaçao in boxes was bought in at from 40s. to 45s.

BENZOIN.—The sole offering consisted of 45 cases Sumatra put without reserve, which sold at from 85s. to 87s. 6d. (one lot 90s.) for good thirds with false packed ends, part old fracture.

BUCHU met with good competition at an advance of from 2d. to 7d. per lb. on round leaves, as compared with the previous sale; fair to good greenish round, part stalky, realised 6s. to 6s. 3d. (one lot 6s. 5d.), and yellow round 5s. 1d. to 5s. 6d., subject to seller's confirmation; common brown to good green ovals, part stalky, sold at 2s. to 2s. 2d.; yellow ovals (one bale) 1s. 6d., and good green longs 2s. 3d. Privately there has been a small demand for ovals, which have sold up to 2s. 3d.

CAMPOR (REFINED).—Eight cases Japanese refined ½-oz. tablets sold at 1s. 7d. per lb. subject, and four cases of ¼-oz. tablets were bought in at 1s. 8d., a bid of 1s. 7½d. being refused.

CARDAMOMS.—The bulk of the offerings found buyers, bold sizes being a shade easier, but small and medium were rather firmer, the following rates being paid: *Ceylon-Mysore*, good bold palish to pale, few open, 2s. 3d. to 2s. 5d., bold and medium palish to pale 2s. to 2s. 1d., small and medium palish to pale 1s. 8d. to 1s. 11d., small pale 1s. 4d. to 1s. 6d. *Splits*, medium pale, 1s. 7d. to 1s. 9d.; small pale, 1s. 3d. to 1s. 5d.; fair seed, 1s. 8d. to 1s. 9d.

CASCARA SAGRADA.—Fifty-one bags fair, imported in 1907, sold at from 33s. 6d. to 35s. per cwt. gross for net, and a further 100 bags 1907 crop were limited at 35s.

COCA-LEAVES.—Ten bales fair green broken Truxillo were bought in at a nominal figure; 4 bales sea-damaged and broken sold at from 3d. to 10d. per lb.

COCHINEAL.—Six bags, offered without reserve, sold at 7½d. per lb. for common black.

COLOCYNTH.—A case of fair small to bold pale Turkey apple sold at 1s. per lb.

CUBEBS.—Four bags fair clean genuine were held at 11½, an offer of 10d. being refused; fair, but stalky, were limited at from 9d. 15s. to 10d. per cwt.

DRAGON'S-BLOOD.—Three cases fair reboiled Singapore lump were bought in at 11d. per cwt.

ERGOT.—Privately there is a steady inquiry with sales of sound Russian reported at 1s. 6d. per lb.; in auction 10 bags were bought in at 1s. 8d.

HONEY.—Jamaica sold without material change, very little good quality being on offer. Ordinary brown to brownish liquid sold at from 24s. 6d. to 25s. 6d., palish brown setting at 25s. 6d., and palish set 25s. per cwt.; fair liquid St. Lucia was bought in at 27s. per cwt.

IPECACUANHA.—No Matto Grosso offered; of Cartagena 23 bales were shown, and one of ordinary pickings sold at 3s. 8d.; fair average quality was held at from 5s. 9d. to 6s. Three bales Minas were offered, for which 7s. 6d. was asked. Privately it is reported that the Hamburg market has now been cleared of Cartagena, and that the supply of Minas is extremely small.

JALAP.—Thirteen bags, analysing 10.7 per cent. resin according to Dr. Gilbert's analysis, sold at from 1s. 11d. to 2s. per lb., no allowance or discount. Privately the market is firm at from 1s. 7d. to 1s. 9d. per lb. for 7 to 10 per cent.

MENTHOL.—Five cases Kobayashi were held at 9s. 2d. per lb., a bid of 9s. 1d. being refused.

OIL, PEPPERMINT.—Five cases Japanese (Yazawa) were bought in at 5s. 9d. per lb., a bid of 5s. 6d. being refused.

ROSE PETALS.—New French were bought in at 2s. 3d. per lb.

SARSAPARILLA.—No grey Jamaica offered; privately it is scarce and wanted. Native Jamaica, however, is plentiful and neglected, only one bale being disposed of out of thirteen offered, at 9d. for dull red (wrapper stained). Fair red, of which only one bale offered, was bought in at 10½d. per lb. 24 bales of Lima-Jamaica were bought in at from 1s. to 1s. 3d.

SENNAL.—Of Tinnevely leaf 332 bales were offered, the bulk of which was of new crop, and sold well at from 3d. to 3½d. for good green medium to bold leaf, 2½d. to 2¾d. for fair green medium leaf, and 2d. per lb. for small leaf, fair colour, down to 1½d. to 1¾d. per lb. for common manufacturing grade. Seven bales fair pale pods sold at 3d. per lb. Of Alexandrian, 3 cases fair green three-quarter leaf sold at 4¾d. per lb., subject to sellers' confirmation. Pods, 25 bales offered, and 5 bales fair sold, "without reserve," at 5½d. per lb., balance being withdrawn. The *Clan Macdonald* has brought 258 bales Tinnevely to London, and the *City of Oxford* from Alexandria has brought 227 bags Alexandrian to Liverpool.

TURMERIC.—Sixty-four bags fair "coloury" Madras finger were held at 22s., at which private sales have been made.

WAX, BEES'.—The chief offering was 717 packages Abyssinian of fair bright block, for which from 6d. 15s. to

6l. 17s. 6d. was wanted, an offer of 6l. 15s. being refused for the best quality. Two bags Australian, of mixed colours, sold at 7l. 17s. 6d., and for two packages Jamaica, all that offered from 7l. 5s. to 7l. 10s. was paid for greyish to good red; 42 bales fair even Zanzibar block were limited at 6l. 17s. 6d. per cwt.

WAX, VEGETABLE.—A lot of 25 cases barely fair tiles sold without reserve at from 41s. to 41s. 6d. per cwt.

Otto of Rose.

Our Bulgarian correspondent writes on August 4 that, "as already reported, the excitement in the Bulgarian rose-market continues to abate. While the sellers of put-up grades and the owners of old stock appear desirous and even anxious to sustain the high prices of two weeks ago, nobody appears disposed to invest heavily in expensive and doubtful stock before he is assured of finding ready buyers. Meantime no important deals in otto have taken place in any of the consuming-markets. All the transactions reported from the Bulgarian market during the past week cover only the purchases of the yield of three small villages, in all 3,000 oz., at from 25s. to 27s. per English oz., which are about 2s. less than the prices of a fortnight ago. This downward tendency is bound to continue until the prices reach their normal rate. However, the actual breakdown in the Bulgarian rose-market is expected to come when the exporters transfer their operations to the consuming-markets and attempt to dispose of their new stocks. At the best, this year's demand for natural otto will be comparatively very small. Most of the large consumers appear to be well stocked, and after the many unpleasant experiences of last year with grossly adulterated stuff, sold as finest virgin and absolutely pure, buyers are bound to be shy and to buy very sparingly. This year the total output of otto in Bulgaria, including old and new stock, good and bad otto, will probably exceed 150,000 oz., and the prevailing opinion is that fully one-third of it will remain unsold."

The Advance in Turpentine.

An important advance took place in turpentine during July, brought about by the strong statistical position. The situation is a remarkable one, and it would not be surprising if the value of the American description, despite the competition of French and Russian, developed inflation. The imports of turpentine into the United Kingdom during the first half of the present year were 143,121 cwt., against 150,905 cwt. in the same period of 1909, and 194,303 cwt. in 1908. Although buying has been conducted with caution for some time, and stocks in the hands of consumers are considerably reduced, it is apparent that the world's consumption is in no way lessened. The receipts in Savannah since April 1 have been on a very reduced scale compared with the two previous years, and arrivals at the shipping ports are cleared almost daily, both exporters and consumers operating freely. Stocks at the principal markets of the world are much below those at this time last year. From last season there was a heavy carry-over, whereas the present supply on hand shows a material deficiency, while consumers are working on the smallest possible stocks. As the crop-returns indicate a decline in the outturn of turpentine in the United States this season, and taking into account estimated requirements, not only is the present position of turpentine a strong one, but the advance in quotations is justified. American spirit is now quoted on the spot at 49s. to 49s. 6d., or about 5s. per cwt. higher on the month. A similar state of affairs prevails for resin, and prices have heavily advanced.

Sudan Gum Acacia.

In the monthly report for June of the Sudan Economic Board the Governor of the Upper Nile Province draws attention to the favourable opportunities for working the Talh gum forests in the neighbourhood of Galhak, near Jebel Ahmed Agha. Causeways have been made to enable the produce to be brought down from the mainland over the marshes to the river, and twenty-five miles of cut road lead straight into the forests from the Meshra on the Nile; this road is crossed at angles by various native tracks, so that there is perhaps no other gum area in the Sudan with such favourable conditions for collection and transport to Khartoum. Camels have done exceedingly well in this area from December to June, being brought yearly from Sennar and the Blue Nile and hired to carry Dinka corn to Renk. Local merchants cannot work this gum district, as they have not sufficient capital and possess only small stocks of trade articles. After the rains are over, some immigrants who have applied to make a settlement on the Goz lands at Galhak will be placed there. This will assist the labour question to some extent, but merchants with capital will still be a necessity for development.

THE exports of yerba maté (Paraguay tea) from Coquimbo during 1909 amounted in value to 14,075%, an increase of 5,960% over 1908.

Nutmegs.

THE West Indian Department of Agriculture has recently received inquiries as to the prospects of disposing of the essential and expressed oils of nutmeg at remunerative rates. In response to these the "Barbados Agricultural News" has collected and published information of a general character, of which we give a summary. We may, however, add that there is only a very limited demand for either the oil or paste. The United States is the largest consumer of nutmegs; but it appears, according to the "Spice Mill," that, although the ordinary consumer has never heard of or purchased British West Indies nutmegs under their name, still those articles are being sold mixed with Singapore nutmegs. Owing to the small demand in the United States for the West Indian nutmegs, because of their inferior quality, the importations are exceedingly light, amounting to about 2,000 barrels per annum. The nutmegs are shipped principally from Grenada (which island is the heaviest producer of the entire group of the British West Indies) to London. There they are graded as to size, and mixed with Singapore nutmegs, and then shipped to the United States market and sold under the trade name of Singapore nutmegs, according to size and quality. The total production in the B.W.I. is so small that it is not taken into consideration in the preparation of statistics. Not until the quality of West Indian nutmegs is improved by cultivation can they be sold under their real name. Attention is also drawn to a translation of an article bearing on the subject generally, from "De Indische Mercur," in which the chief conclusions of Dr. Treub, director of the Botanic Gardens, Buitenzorg, Java, are:

(1) That the price obtained for nutmegs has been declining, with large fluctuations, for many years. Dr. Treub shows this by a series of tables, which give the prices obtained in Amsterdam for 110's to 115's, in cents, for Banda nutmegs, since 1898. (2) It is difficult to trace the real cause of the lower prices. It is not entirely due to overproduction, as Dr. Treub shows by another series of tables, giving the total export from the Dutch East Indies since 1898. (3) It is suggested that the fall in value is due to a smaller demand, consequent on a decreased consumption *per capita*. (4) In considering any possible effects of increased production, the exports from Java cannot have had much influence on the result. This is shown by a table compiled from the statistics of the Handelsvereniging (Commercial Society) of Batavia, Java, which shows the share of that island in the total export from the Dutch East Indies. (5) As far as nutmeg paste is concerned, it appears that this is only used in the drug-trade, and, to a certain extent, in the manufacture of perfumery. It is not likely that the fall in price of this, in harmony with that of nutmegs, would lead to such an increased demand as to react in the direction of raising the market value of nutmegs. (6) The field for nutmegs as a spice is much larger than that as a material for the oil. Even if the nutmeg paste could be used on a larger scale for manufacturing soap, the price paid would be too low to make it profitable to grow nutmegs.

In view of the fact that the demand for nutmegs is not greater, and that there does not seem to be any prospect of its increase, Dr. Treub recommends that growers in Java should not enlarge the area under cultivation, but that they should replace the plant by another crop as soon as possible.

MEXICAN TRADE.—M. C. Bilhaut, French Councillor of Foreign Commerce, has published some notes on business in Mexico in "Commerce et Industrie." He says the country is overrun with German commercial travellers, who, by giving long credits, do a good deal of business. The best time to visit the country is in May, June, and July. Spanish is most useful, but English comes second among the serviceable languages. Expenses would vary from 50 to 75 piastres per diem, counting from disembarkment to embarkment. The railways only carry 30 lb. of luggage free, and the customers expect to be entertained to lunches and dinners, though they usually return the compliment. Vera Cruz, Mexico, Puebla, and some northern towns are worth visiting.



Memoranda for Correspondents.

All communications must be accompanied by the names and addresses of the writers, otherwise they are not recorded. Queries by subscribers on dispensing, legal, and miscellaneous subjects pertaining to pharmacy and its allied trades are replied to in these columns, if they are of general interest. Letters submitted to the Editor for publication (if suitable) should be written on one side of the paper only. Their publication in the "C. & D." does not imply our agreement with the opinions of the writers.

Chemist-extractors.

SIR,—Will you allow me to acknowledge through the medium of your columns the letters received in answer to my letter a month ago? To reply to the many correspondents would take some weeks, and so I propose to answer all by informing them what we chemists in Nottingham suggest. We have decided to ask the Editor of THE CHEMIST AND DRUGGIST to allow a meeting of chemist-extractors to be held at 42 Cannon Street, London, E.C., on Thursday, September 1, at 7 P.M., when steps can then be taken to form a Society at once. Officers could be elected and the amount of subscription fixed. I sincerely hope that all chemists doing dental work will make a special effort to attend this meeting. I admit there is no immediate danger, but we can be organising our forces, and getting ready for any attack that may be made in the near future. There is no doubt that in six months' time, if only we would throw off the apathy which is now so noticeable and put our shoulders to the wheel, we should be a force to be reckoned with.

Yours truly,

Mansfield Road, Nottingham.

W. MEAKIN.

[We shall be glad to give the facilities asked for.—ED.]

SIR,—With particular interest I carefully read all your correspondents' letters regarding the Dental Bill, and was more than glad to find that there are a few supporters prepared to cross swords with our "qualified" rivals. My experience of dentistry is, I consider, far from equal to many of our unavoidably unqualified extractors and adaptors of teeth, but at the same time it is my greatest ambition to urge all those forward (who wish to maintain their present position and rights) to do the best they possibly can to prevent the proposed Bill becoming law. I could name a town of 12,000 to 15,000 inhabitants where dentistry was progressing very favourably in the hands of two resident dentists, one chemist, and about three visiting dentists, and just recently a registered dentist hired rooms and stuck a board outside with his fees on, as follows:

	s.	d.
Ordinary extractions	0	6
Painless extractions	1	0
Nitrous-oxide extractions	2	6

Those are the class of dentists that ought to be looked after. I am glad to read that the C. & D. is taking up this movement, which I earnestly hope will be successful. I should be pleased to support any society that may be formed.

Faithfully yours,

A FUTURE ONE. (252/43.)

SIR,—The attention of the Council of the National Dental Corporation has been drawn to the interesting correspondence published in your columns during the last few weeks on the proposed dental legislation which is to be promoted by the British Dental Association. At this critical period in the fortunes of unregistered dental practitioners the Council think that many competent ethical unregistered men who have not yet become members of the Corporation may wish to do so, and with your permission I give briefly the objects of this Society and the conditions of membership. Membership is open to all *bona-fide* ethical dental practitioners, including chemists and druggists, who have five years' operating experience, whether their names are on the Dental Register or not. The Corporation is, I believe, the only dental organisation which frankly and fully

recognises the actual conditions of dental practice in this country and seeks to arrive at a *modus vivendi* fair and equitable to all parties concerned—

(a) It recognises the position of seniority necessarily held by a holder of the Licentiate of Dental Surgery.

(b) It admits and deplores the evil done alike to honourable dental practitioners and to the public by the existence of a large number of unscrupulous and incompetent advertising quacks.

(c) Unlike other Societies, however, the National Dental Corporation affirms that the present constitution of qualified dental practice *cum curriculo* is no longer co-related to *bona-fide* dental practice as a whole, in the sense that no one can now fairly deny that there is a large number of thoroughly competent unregistered dental practitioners, with years of varied experience behind them, who, in innumerable instances, are in no way inferior to those holding the L.D.S., and conduct their practice in an entirely ethical and honourable fashion.

(d) Nor does the Corporation in its public propaganda ignore the fact that a large number of men are on the Register through circumstances by no means supporting any claims to dental competence, and who are as a matter of fact in many instances wholly inferior in competence to such unqualified dentists as I have referred to.

In the recognition of these facts, and in their recognition the unification of all grades of *bona-fide* dental practitioners willing to adopt a common platform in the conduct of an ethical dental practice, the National Dental Corporation is pursuing the only possible, as it is the only equitable, road to reform and the protection of legitimate professional interests. There are on the Council L.D.S.s, D.D.S.s, M.P.S.s—qualified and unqualified men. The annual subscription is one guinea (which includes the official organ). At the present moment a relatively small number of men are bearing the heat and burden of the day, and I hope that every dental practitioner who reads these lines and who feels that he can offer himself for membership of the Corporation under the conditions adumbrated above will do so.

J. H. MANNING, Hon. Secretary.

8 Henrietta Street, W.C.

Nemo (250/20) writes a long letter on the subject, and finishes as follows: "I am willing to subscribe up to 4l. along with twenty-five or more equal amounts for a start."

Testing Ergot.

SIR,—Your reports of meetings are usually so accurate that I am sure you will be glad for me to correct a slip you make in my remarks on ergot published in the Summer Number, p. 208. I made no reference to Dr. Haynes, but what I said was, "I regretted the absence of Dr. William Martin, who contributed a paper on physiological testing to the Conference last year, and who since then had been continuously testing, by physiological methods, preparations of ergot without so far leading us to modify our formula." I may add that while welcoming and using every scientific advance whether of instruments or methods to assist in the identification, testing, and valuation of medicines, I do not lightly abandon fifty years of extensive clinical experience of drugs, because this does not appear to be supported by academic reasoning or laboratory experiments.

Yours faithfully,

Newcastle-on-Tyne.

N. H. MARTIN.

Born in the Purple.

SIR,—I think you are wrong in your note on the origin of the expression "Born in the purple" (C. & D., August 6, p. 231). It is true that the use of purple was restricted to the Royal house by the Theodosian Code (see Book 10, tit. 21, leg. 3, or Codex Justinian, Book 11, tit. 8, leg. 5), but exceptions were allowed to the female dancers of the period. The origin of the phrase lies in the fact that the pregnant empresses of the Byzantine Empire always brought forth their children in a room lined with purple or porphyry, and the children so born were called "porphyrogenetic," or "born in the purple." The appellation appears to have been first borne by Constantine VII. (that is, Constantine X. of Eckhel or XI. of Humphreys). It is purely a matter of academic interest, but reading the note in the C. & D. I remembered of old Roman Law and the word "porphyrogenetic."

Yours truly,

ERNEST J. PARRY.

Buchu Substitute.

SIR,—I have read with the greatest interest the note in the *C. & D.*, July 2, p. 17, regarding a buchu substitute, investigations of this particular kind being in my line. The detailed description points to a plant belonging to *N.O. Leguminosa*. The well-drawn intercellular secretory deposit and characteristic surrounding cells leave it without doubt that the drug belongs to the genus *Psoralea*—these secretory organs being actually a characteristic organ of this peculiar genus. There being a large number of species closely resembling each other, the identification of the drug will be only possible by actual comparison. I enclose a specimen of *Psoralea bracteata*, L., which nearly tallies with your description; this, being a fairly common plant, could be easily collected in quantities and used for adulteration.

Yours faithfully,

Cape Town, July 10.

W. FROMELING, Ph.D.

Chances in Australia.

SIR,—“Ph. Chemist,” in the *C. & D.*, May 28, p. 833, practically intimates that there are openings galore for chemists in Australia. I beg to reply to this; and from a very fair knowledge of general conditions, I think that there are very few openings indeed. In most small towns—some only worthy of the name of hamlet—there are two or three chemists, and the amount of spare time they have in a year is very large. The local supply of chemists in all the States is quite ample to keep pace with the demand.

Yours truly,

June 29.

PH. CHEMIST (VICTORIA). (255/9.)

Chemists' Combines.

SIR,—I should like to point out that the Ucal scheme is an example of true co-operation. The Ucal member depends for his remuneration on the bonus which comes to him from his sale of the Association's goods, and not from his interest on his shareholding, which “Anti-Combine” seems to forget. There is no great inducement for chemists to take up huge blocks of “Ucal” shares, as they yield only 5 per cent. on the investment, but there is every inducement for them to sell “Ucal” goods. As to Camwal shareholders getting behind the articles of association, surely this was the fault of the shareholders themselves, as they had the power in their hands to prevent it. Such matters have to be conducted according to certain legal processes. It is better, however, to discuss the practical rather than the hypothetical and problematical. Let me invite “Anti-Combine” to become a member of Ucal, and lend his interest and brains to it; and if the future be not as secure as he would wish, then devise means to prevent the dire results which he, in his visionary moments, sees possible. Co-operation outside the ranks has attained such proportions that it behoves chemists to see whether by co-operation they cannot safeguard the future. We have now nothing to induce “Co-op.” members to come into our pharmacies; but if we are all running a set of proprietaries jointly owned, such as Ucal's, the case would be different. Then, attracted by, say, “Ucal” Emulsion, we should have a chance of doing further business with them. It is daily becoming more difficult for the individual chemist to compete with these huge combines, which fact “Anti-Combine” does not seem to have yet realised. Can it be disputed when I say that thousands of customers are yearly thrown into the arms of the big nostrum advertisers through each chemist pushing his own preparations? Time is spent in getting a customer for, say, Jones's Pills. He leaves one town, and in the next he goes to is persuaded to take Smith's. This sort of thing is continued *ad nauseam*, with the result that the man says, “Oh, give me Beecham's; I can get them anywhere!”

Yours faithfully,

Bingham.

CHAS. C. H. CADGE.

SIR,—“Anti-Combine” is opposed to combination. Why? Because of the difficulties and risks. He says you must not combine because your combination may play you false. But we cannot have the benefits without the difficulties. At present we are threatened with extinction by departmental and co-operative stores, not to speak of syndicates, and our businesses are being exploited and our qualification rendered null and void by advertising adven-

turers. Are we to sit passive and allow these hydra-headed bodies to have their way? “Anti-Combine's” fears as to a change of policy of “Ucal” applies with equal force to all combines—“P.A.T.A.,” “B.P.C.,” and even the Pharmaceutical Society. The case of “Camwal” is not *à propos*. A centralised water trade, even on co-operative lines, must of necessity be a herculean task. If we shut our eyes to the forces that are against us we shall one day wake up to the disastrous consequences of such a policy. By all means let every chemist “make, put up, and push his own lines.” This perforce he has to do on a very modest and limited scale. His efforts must be largely supplemented by manufacturers and specialists. Ought he not also to combine to produce and distribute distinctive articles of superior quality and “get-up”? This is the only way I can see that a pharmacist can secure to any extent the legitimate profits from the exercise of his own skill and industry, and outwit the enterprising advertising adventurers. Combination can only be successfully met by combination. “Ucal” provides an easy means whereby the smallest chemist may derive the maximum of benefit with the minimum of risk, and is the first successful effort in the drug-trade to unite the scattered units in a practical scheme of mutual helpfulness.

I am, yours truly,

Edinburgh.

W. S. GLASS.

Subscribers' Symposium.

(Information Solicited or Supplied.)

Eczema Pigment.

A hospital orderly from Ladysmith tells me saturated solution of borie acid and ung. acid. borie. alb. were used for eczema as a pigment and ointment.—J. A. Foster (Birmingham).

Loose-leaf Ledgers.

If your correspondent would try “Moore's Modern Methods,” I am sure he will be satisfied with the result. There are about thirty different forms suitable for all purposes, and the loose-leaf small ledgers of the same manufacture are ideal for businesses with a large number of small accounts. I am using this system for several purposes, and find it very suitable.—Wm. Bousfield (Sutton Coldfield).

I commenced the loose-leaf ledger system twelve months ago, and should not care to go back to the old bound-book system, being highly satisfied with the new system. Before purchasing, I went thoroughly into the various makes, and decided on a “Cope-Chatt,” which is a metal-pillared one, as I do the bookkeeping at home, and consequently have to remove and replace leaves frequently. If this has not to be done, I should advise a “Kalamazoo,” which I consider the best of its type.—A. (255/6.)

C. & D. Dose Tables.

The changes that have taken place in pharmacy of late years have led to the publication by THE CHEMIST AND DRUGGIST of dosage tables, and the publication has opened a wider field for the consideration of the nature, dosage, and general properties of drugs. The object and the considerations that most adequately cause the recommendation of this little brochure are chiefly those of giving a comprehensive glance at the present-day position of pharmacy, while serving as an aid to memory for those who have to learn doses. It is to be remembered that the abbreviated column of doses is given in grains and minims, and although the conversion of solids and liquids in the two cases is not absolutely that of weight and volume, the limits are within the accuracy needed for the doses to be prescribed. These limits were officially fixed in 1896, and there has been no official revision since then, so that many of the current needs of pharmacy are supplied in the Dosage Tables; and where the drugs are of a more recent date than 1896 there are further advantages that are adequately served by the alphabetical arrangement.—J. C. Thomlinson (Gateshead-on-Tyne).

Dispensing Notes.

Most dispensing problems are dealt with in “The Art of Dispensing,” but we are always pleased to get fresh ones for solution, and to receive the opinions of readers on the points discussed.

Resorcin Lotion.

SIR,—I shall be obliged if you will kindly say what should be the colour and appearance of the following lotion. I have made it up strictly according to the prescription, and find it as I expected to—whitish. The customer states that he got it

made up previously, and it had a pinkish tint, which changed to dark red with a heavy sediment.

Yours truly,
SCRUPULOUS. (247/52.)

1.
Lysoform ... 3iss.
Resorcin ... gr. xij.
Aqua dest. ad ... 3iij.

2.
Tinct. canthar. ... 3ij.
Ol. rosmarini... 3j.
Tr. benz. simplex ... 3ij.
Sp. vini rect. ad ... 3iss.

Mix No. 2 with No. 1.

[When newly prepared, the lotion is white and milk-like, owing to resin from the tincture of benzoin being thrown out of solution and diffused through the liquid when No. 2 is added to No. 1. After standing for four days, a slight coloration is perceptible, but only such as may be expected when resorcin is present in an alkaline compound. It cannot be described as pink; it is just a faint brown. There is no appearance of sediment. The colour may darken with age, but we do not think it will become dark red, nor will there be a heavy sediment. There is nothing to form such a sediment.]

Legal Queries.

Consult the legal information in "The Chemists' and Druggists' Diary," 1910, before writing about your difficulty.

T. L. O. (256/25).—FORMING A PRIVATE LIMITED COMPANY.—See the *Chemists' and Druggists' Diary*, p. 240.

Pil. Rhei Co. (249/18).—The third-part sample left with the vendor by an inspector under the Sale of Food and Drugs Act is the property of the vendor.

Alpha (249/35).—PAYMENT OF VALUER.—The purchaser and vendor of a business often agree to accept the valuation of one expert, each paying half the fees. In event of the sale falling through, the fees are still payable as agreed; but before a valuation is reached the would-be purchaser should have paid a substantial deposit.

Ph.C. (255/59) pays 50l. rent for his premises, and holds an optional lease for seven, fourteen, or twenty-one years. His gross rateable value is 52l. 10s.—*i.e.*, 5 per cent. added to the rent, and then the usual 15 per cent. deduction is made, bringing the net value to 44l. 15s. If he had no lease the net value would be 42l. 10s. Is this addition of 5 per cent. to rent usual or legal? [It is customary to add a certain percentage for rating purposes to the rental when property is held on lease, and in some parts of London 5 per cent. is added when the lessee does the inside repairs, and 10 per cent. when he does full repairs. It would seem, therefore, that you are not at all badly treated in having only 5 per cent. added.]

Miscellaneous Inquiries.

As we do not in this section repeat information given during the past twelve months, inquirers should refer to the copies mentioned. Back numbers for the past five years can generally be obtained from our office at the published prices.

C. S. T. (258/18).—"Pis aurantii" is an immature orange. By "Glob. Contus" we presume globuli contrayervæ is meant. The balls were composed of powdered contrayerva root and weak mucilage.

H. K. (241/28).—You will find full information as to the method of forming a private limited company in "The Handy Book on the Law and Practice of Joint Stock Companies," by Anthony Pulbrook (4s. net), published by Effingham Wilson, Threadneedle Street, London, E.C.

J. W. F. (254/12).—CHILBLAIN TABLET.—The formula for which you inquire is:

Camphor	...	...	...	8 oz.
Iodine	...	...	...	2 oz.
Eucalyptus oil	...	...	...	15 oz.
Terebene	...	...	...	15 oz.
White wax	...	...	...	2 lb.
Soft paraffin	...	...	...	4 lb.

Mix.

W. P. W. (255/4).—The pipes of beer-engines are cleaned by passing through them a solution of caustic soda. The sodium hydrate is supplied for the purpose in the form of a coarse white powder, which for use is dissolved in water. The pipes must be well rinsed with water after the treatment with alkali.

R. W. R. (252/6).—Can any reader give the formula for Sir Lauder Brunton's dinner pills?

Esrom (244/60).—TICKET-WRITING.—The practical details were given rather fully in Mr. Marfitt's paper which appeared in the last Winter Issue of THE CHEMIST AND DRUGGIST (p. 168).

Querist (244/1).—It depends upon the ingredients of the powder as to whether it is amenable to analysis. Some vegetable powders are readily recognised under the microscope, but the analysis is far from easily performed.

Ajax (253/68).—You do not give any particulars as to the places infested with weevils. The pest is attacked by carbon bisulphide, but the method depends upon the material or place infested.

F. H. W. (253/16).—For method of registering trade-marks see the *Diary*, p. 240.

D. F. (234/32).—The "lime-cream" is a nice preparation, and the sample you sent has not separated. The perfume is pleasant, but the use of lemon or lime flavours is characteristic of the preparation. You do not say whether the emulsant is lime-water; if not, you will have destroyed all claim to call it "lime-cream."

Desirous (269/31).—HAIR-DYES.—Your samples of hair that has been subjected to an acid pyrogallol solution are interesting. You will be more successful if you add ammonia or employ the Lucas formula given in "Pharmaceutical Formulas," ed. vii., p. 124.

C. M. W. G. (248/20).—FRUIT-ESSENCES.—You will find the information you require in "Pharmaceutical Formulas"; there is no other book that gives such full particulars of the methods of making fruit-essences.

A. F. N. (233/59).—DIABETIC MARMALADE.—We did not publish a formula for this; we suggested that the jelly portion should be made of orange-pulp and gelatin sweetened with saccharin in the proportion of about $\frac{1}{2}$ oz. to the hundred-weight.

F. E. B. (250/23).—The WAX-POLISH used by furniture-makers for wax-polishing is prepared by melting beeswax, removing from the fire, and adding turpentine to make it of the consistence of a thick cream. Other waxes are sometimes used, but "old hands" state that plain beeswax and turpentine is best, as it does not darken the wood—a consideration in the case of parquet-flooring.

A. C. F. (250/61).—BOOKS FOR PRESCRIBERS.—To supplement "Diseases and Remedies" you will find Latham's "Dictionary of Medical Treatment" useful. It is published by Churchill at 6s. 6d. More ambitious works are Quain's "Dictionary" and "The Practitioner's Guide," published at 21s. each by Longmans.

C. W. P. (252/18).—DESTROYING WASPS.—The "acid" poured into wasps' nests, and which kills at once, is solution of potassium cyanide, one or two ounces to the pint.

Jacob (250/50).—We have no formula for a non-poisonous sheep-dipping powder.

Retrospect of Fifty Years Ago.

Reprints from "The Chemist and Druggist," August 15, 1860.

Scientific Notes.

Mrs. Mary Fajarde and Mrs. Caroline de Matos have lately obtained diplomas as pharmacists from the Medico-Chirurgical School of Lisbon. It would appear, according to the "Gazette Médicale," that these ladies have already been admitted in the same capacity at Oporto, in 1829.

A prize of 6,000 francs is offered by the Society of Pharmacy at Paris for "the question of the artificial production of quinine, or in default of this, of a substitute possessing equivalent anti-febrile properties." This prize has been open since 1849 and the time is strictly limited to July, 1861, and is open to competitors of all countries.

Sir David Brewster, inquiring into the history of the stereoscope, finds that its fundamental principle was well-known even to Euclid; that it was distinctly described by Galen 1,500 years ago; and that Giambattista Porta had, in 1599, given such a complete drawing of the two separate pictures as seen by each eye and of the combined picture placed between them, that we recognise in it not only the principle, but the construction of the stereoscope.

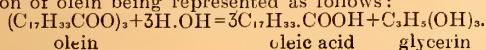
Niemann, the assistant of Wöhler, has succeeded in isolating the active principle of *Erythroxylon Coca*, the leaves of which are used in Peru as a stimulant, like opium. He has named the new alkaloid, *Cocaine*.

Corner for Students.

Summer Studies.

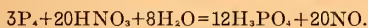
Pharmacopœial Notes.

OLEIC ACID ($C_{17}H_{33}COOH$) may be prepared by the student by warming a solution of hard soap of the Pharmacopœia with a dilute mineral acid. The displaced oleic acid rises and may be separated when the mixture cools. Fixed oils and fats usually consist of the glycerides of various fatty acids (oleic, palmitic, and stearic, mainly). The solid fatty acids are used in candle-making, and thus, commercially, liquid oleic acid is a by-product in this industry. The glycerin in combination with the acid is also removed, otherwise a disagreeable odour is produced in burning, due to the formation of acrylic aldehyde. Fixed oils and fats are decomposed into their constituent acids and glycerin when heated with steam under pressure (superheated steam), the decomposition of olein being represented as follows:



On cooling the separated fatty acids the palmitic, stearic, and other ordinarily solid acids solidify first (oleic acid only solidifies below $5^\circ C.$), and the liquid oleic acid can be drained off in a pressure filter. Another method is to saponify the fatty compounds by heating with milk of lime, the lime soaps being decomposed with a mineral acid and treating the fatty acids as above. These manufacturing methods do not yield a product free from stearic and palmitic acids, as is recognised in the Pharmacopœia, since the tests therein allow small quantities of these acids to be present. The test to ensure that an undue amount of solid acids is not present is based upon the insolubility of lead palmitate and stearate in ether, which dissolves lead oleate. The directions ensure the formation of these lead salts in the presence of ether, which is a better plan than adding ether after their formation, as it is easier to keep a substance in solution than dissolve it after it has been once precipitated. Oleic acid is an unsaturated compound containing a double linkage in the carbon chain, and, in common with such substances, is relatively unstable in comparison with fully saturated acids (such as palmitic). The rancid odour of carelessly stored oleic acid is due to the formation of oxidation products. Elaidic acid is a solid isomer of oleic acid produced by a shift in the position of the double bond, as is the case with elaidin formed from olein in the preparation of nitrate of mercury ointment. Nitrous acid effects the change, apparently acting as catalyst.

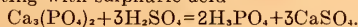
PHOSPHORIC ACID.—The concentrated acid of the B.P. contains 66.3 per cent. of hydrogen phosphate (H_2PO_4), or orthophosphoric acid. It may be prepared in several ways: (a) By exposing phosphorus to air, allowing the oxides to fall into water. This can be done by placing sticks of phosphorus in a funnel inserted in a bottle containing water, keeping the whole in a cool place. The resultant solution contains a mixture of phosphorous (H_3PO_3 , from the trioxide P_2O_3) and phosphoric acids (from the pentoxide P_2O_5), and the solution must be boiled to completely hydrate the meta- and para-phosphoric acids (HPO_3 and $H_4P_2O_7$) to the ortho-acid. The addition of a little nitric acid facilitates the hydration and also oxidises any phosphorous acid to phosphoric acid. (b) The phosphorus may be oxidised directly by heating with nitric acid, which is a more costly process. Any excess of nitric acid is removed during concentration of the acid—



(c) By passing chlorine into water containing phosphorus, the phosphorus pentachloride formed being decomposed by water. The hydrochloric acid is driven off by evaporation—



Note that bromine cannot replace chlorine (see Hydrobromic Acid). (d) Bone ash (calcium phosphate) yields phosphoric acid on heating with sulphuric acid—



The reaction mixture is diluted, and the calcium sulphate is filtered out. Arsenic, if present, is removed as sulphide by saturating with sulphuretted hydrogen. Sodium and magnesium, which are usually present, form difficultly soluble pyrophosphates when the acid is evaporated to dryness and heated. The more soluble phosphoric acid is taken up with water and adjusted to the proper specific gravity. The likely impurities (incompletely oxidised and hydrated acids of phosphorus, nitric and hydrochloric acids, calcium, sodium, magnesium) should be obvious to the student from the foregoing. The B.P. method of estimation depends upon the formation of lead phosphate when the acid is heated with lead oxide. The assay requires careful manipulation, and Wallis suggests that magnesium oxide (heavy calcined magnesia) is more cleanly and accurate.

Poison Licences.

(Poisons and Pharmacy Act, Sec. 2.)

Applications.

BIRMINGHAM.—Charles Henry Moore, manager to Samuel Thornley, Ltd., druggists, dysalsters, oil-importers, and paint-manufacturers, 24 and 26 John Bright Street; Bernard Poynter Tew, assistant to the company at 166 High Street, Deritend; Arthur Baird, manager for the company at 232 Gooch Street; and Arthur Baker, assistant at Gosta Green.

RYDE (I. OF W.).—Oliver Charles Dunford, nurseryman, seedsman, and florist, 175 High Street.

Application Granted.

WIMBLEDON TOWN COUNCIL.—James Nash and Wm. Jas. Nash, 11 High Street, Wimbledon.

Renewals.

MIDDLESEX COUNTY COUNCIL.—The Council renewed the licences granted in 1909 to H. J. Gibbs, ironmonger, Bedford, and Wm. Wood & Sons, Ltd., horticultural sundriesmen, of Wood Green, and Arthur James Wood, the secretary of the latter company.

College Notes.

WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY.—At the prize competition held in connection with this College last month, the following medals were awarded: *Chemistry*, Mr. W. H. Woodman; *Botany*, Mr. W. Bridges; *Materia Medica*, Mr. V. Stockwell; *Pharmacy*, Mr. E. G. Meyer. All the medallists were successful in passing the Minor examination in July. Twenty certificates were also awarded.

BATH AND WEST OF ENGLAND COLLEGE OF CHEMISTRY.—At the competitive examinations last term the following awards were made: **SILVER MEDAL.**—Mr. L. Fricker. **CERTIFICATES OF MERIT.**—*Chemistry and Physics*, Messrs. H. Francis, L. Fricker, and T. C. Williams; *Practical Chemistry*, Messrs. R. Thompson and C. Watson-Will; *Botany*, Mr. T. C. Williams; *Materia Medica*, Messrs. L. Fricker, R. Thompson, and T. C. Williams; *Pharmacy and Latin*, Messrs. L. Fricker, R. Thompson, and T. C. Williams; *Dispensing*, Messrs. L. Fricker, R. Thompson, C. Watson-Will, and T. C. Williams.

Where to Study.

THE following educational institutions are advertising in this issue:

School of Pharmacy, Bloomsbury Square, London, W.C.
Muter's (South London) School of Pharmacy, 325 Kennington Road, London, S.E.

London College of Pharmacy, 323 Clapham Road, London.
South of England College of Pharmacy, 186 Clapham Road, London, S.E.

Westminster College of Pharmacy, 402 Clapham Road, London, S.W.

Bath and West of England College of Pharmacy, 6 Cleveland Place East, Bath.

Northern College of Pharmacy, 100 and 102 Burlington Street, Manchester.

Birmingham and Midland College of Pharmacy, 45 Newhall Street, Birmingham.

North Stafford School of Pharmacy, Kids Grove, Staffs.

Glasgow School of Pharmacy, 180 West Regent Street, Glasgow.

Royal Dispensary School, 21 West Richmond Street, Edinburgh.

Edinburgh Central School of Pharmacy, 26 Clyde Street, Edinburgh.

Fairchild Scholarship Trustees, 64-65 Holborn Viaduct, London, E.C.

Institute of Chemistry, 30 Bloomsbury Square, London.

University of Birmingham.

University of Bristol (Chemical Department).

University of Durham.

University of Edinburgh.

University of Liverpool (School of Pharmacy).

University of Manchester (School of Pharmacy).

Charing Cross Medical College, London.

Royal Dental Hospital, Leicester Square, London, W.C.

National Dental Hospital and College, Great Portland Street, London, W.

Royal (Dick) Veterinary College, Edinburgh.

City of London College, Moorfields, London, E.C.

Taplow Grammar School, Taplow.

Glasgow College of Optics, 180 West Regent Street, Glasgow.

Armstrong College, Newcastle-upon-Tyne.

South-Western Polytechnic Institute, Manresa Road, Chelsea, London, S.W.

Central Correspondence College, 20 High Holborn, London.

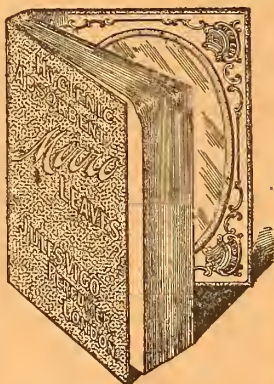
MARSHALL, Colebrooke Works, ISLINGTON, N.

TELEPHONE: 833 CITY.

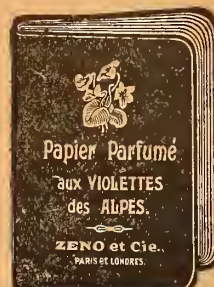
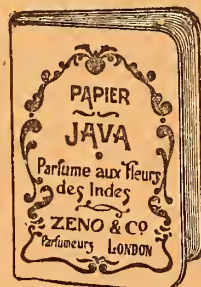
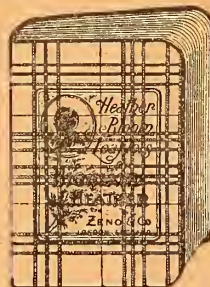
BOOKLETS UP TO DATE.
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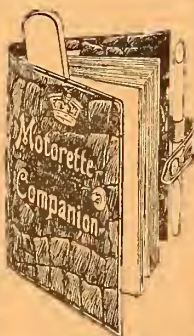
With Mirror, 30/- gross.



Gilt edge, satin bound for high-class trade, 3/6 doz.; with Mirrors, 4/- doz.



Nail Powder Leaves and Manicure Requisites, also Mirror... 4/- doz. A cheaper line in card covers, 2/6 doz.



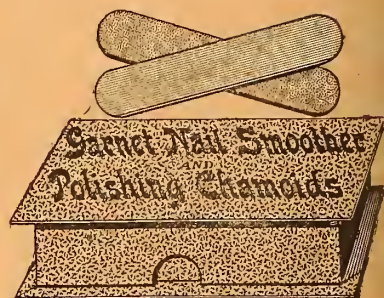
Well-made Leather Wallet, with Gilt edge Powder Leaves. Also improved Nail Smoother & Polisher, &c., 8/- doz. Refills, 1/6 & 2/6 doz.



3/- per doz.



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1 doz. in Box. 5/6 per doz. boxes.



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TUBE WINDERS.



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COLLAPSIBLE TUBES

OF ALL KINDS.

Adeps Lanæ, Anhydrous, Odourless, 10d. per lb.

